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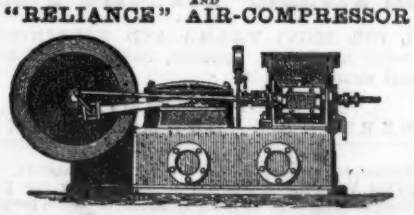

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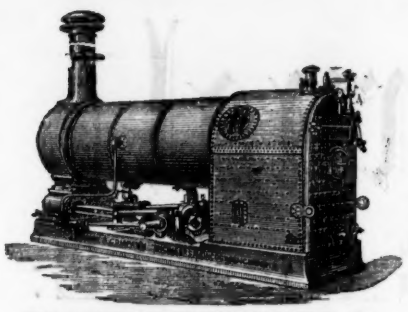

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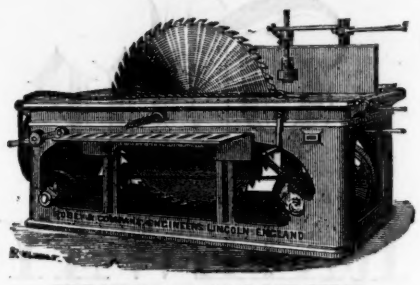

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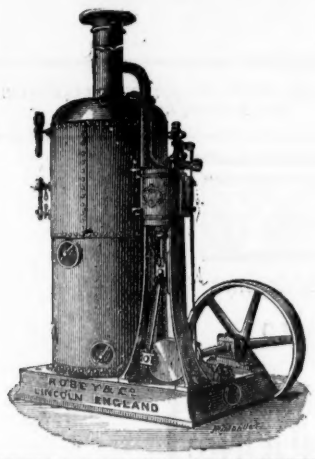

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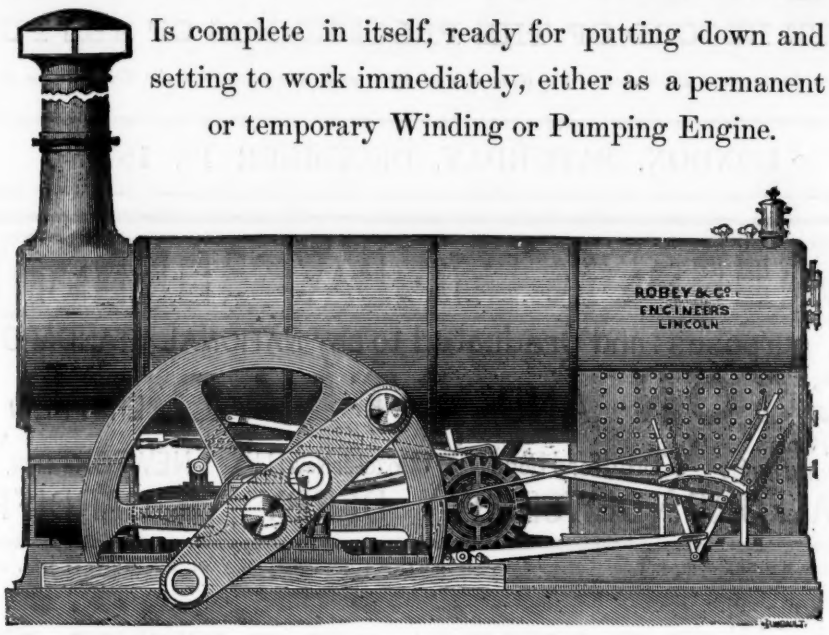

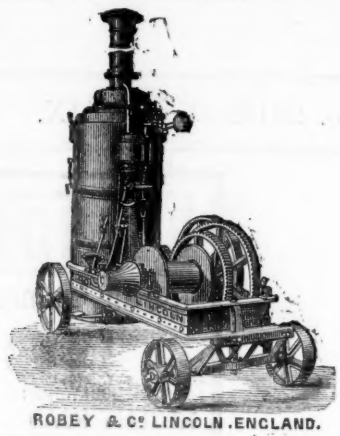

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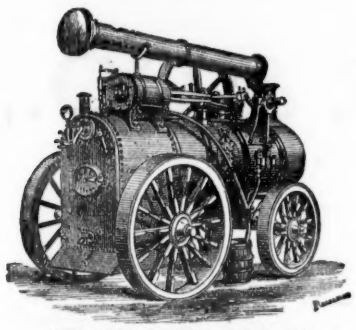

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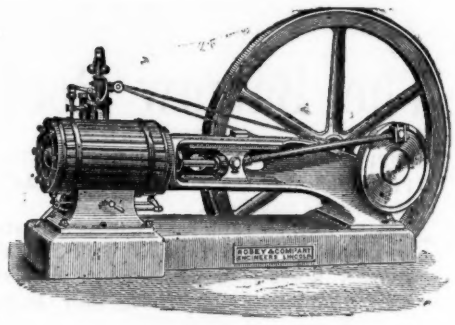

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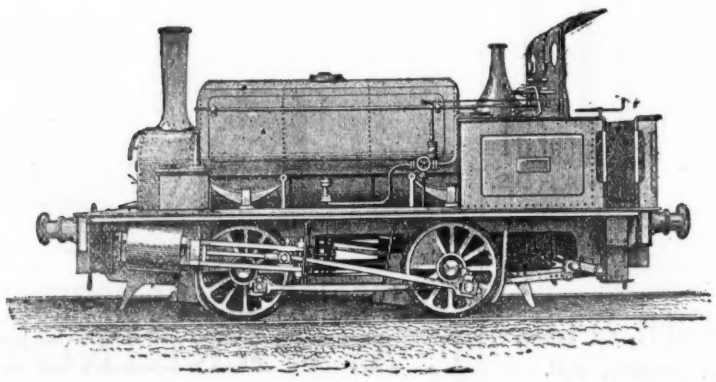

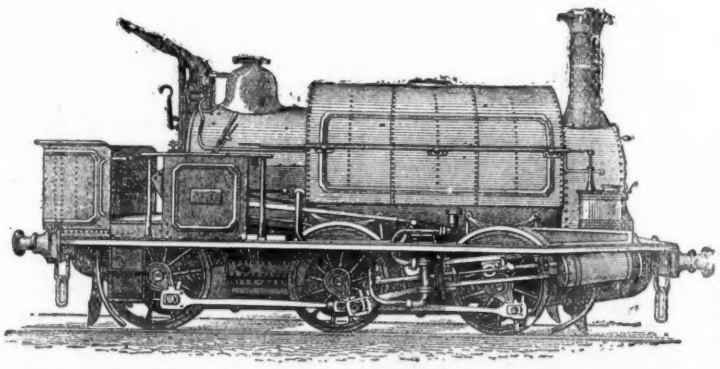

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ON BOILER ACCIDENTS AND THEIR PREVENTION—No. III.

SIR,—The following is an abstract of the third of a series of essays on the subject of steam-boilers, and the prevention of the accidents associated with their use, which was read on Saturday last before the North of England Institute of Mining Engineers, by Mr. D. P. Morison, of Newcastle-on-Tyne. The third part of the subject treats on the setting of boilers and the construction of the flues. The previous papers set forth the modes of effecting additional security, either as adopted or proposed, the results obtained by different insurance and inspection associations in their endeavours to lessen the number of explosions, and the making of enquiries into the causes of such as have occurred. The experience thus obtained should, no doubt, be the means of reducing to a minimum the number of accidents in the future.

The views of one of the principal engineers may be expressed in the following lines. He is convinced that the suggestions he had previously made should be carried out—*i.e.*, the compulsory registration of all the steam-boilers in use, with a return made annually showing by whom the boilers are inspected, the owners being responsible for the choice of the company to inspect or insure. In the case of one insurance company he says they never inspected well until they adopted the partial system of insurance. This gave them a power over the owners of boilers they never before possessed, and the additional responsibility they undertake induces them to secure better inspection and better arrangements for carrying out the same. A census of boilers would be of great value, and this could be obtained from the system of registration referred to. He thinks all explosions should be reported on in a simple manner, whether fatal or not. The greatest apathy is sometimes evinced respecting inspection, and very often boilers are set up with excessively broad seatings, flues almost inaccessible to examination, which lead besides to waste or the excessive use of fuel. If any enactment is passed there should be stipulations to the effect that the boilers should be cleaned, and arrangements made before hand, in order that a satisfactory examination should be made.

"Another Enigineer" says that some companies take too much risk upon them by the desire of profit; in several instances boilers had been insured in other companies which he had refused to take on account of their being, as he thought, not adequate to bear the pressure required. In favour of insurance it may be said that the pecuniary liability involves a responsibility tending to make the inspection more efficient. Though not an advocate for Government inspection, he considers that an investigation should be made into the cause of boilers explosions similar to those in railway accidents by a Government officer, with power to call witnesses. In case of culpable negligence on the part of the owner or an attendant of boilers a prosecution should result.

Having given the views of several other men of experience, Mr. Morison in his paper proceeds to state his own opinion as to the nature of Government supervision of boilers, and how far it should extend.—1. A register of every steam boiler in the kingdom in which the pressure exceeds that of the atmosphere. Such register to be made up by officials, such as overseers, nuisance inspectors, or others (whose duties bring them daily into contact with works and factories) employed in each parish or township, and forwarded to the Board of Trade.—2. The register to specify form, dimensions, uses, and pressure of each boiler, with the name and address of the owner. —3. Such register to be supplemented by particulars furnished by the inspection companies of all the boilers under their charge.—4. That in the event of any boiler accident, or explosion notice should be given by the proprietors to the Board of Trade through the officers named in Clause 1, and should any inquest be held after an accident full particulars of the proceedings at such inquest should be forwarded to the Board of Trade.

Reverting, now, to the third branch of the subject—the setting of boilers and the flues—it has been observed by a competent authority that the best fire-grate, theoretically, is one where the combustion is complete, no waste heat escaping to the chimney, and none lost by radiation. In burning 1 lb. of coal it is possible to evaporate as much as 16·29 lbs. of water; in practice only about 7·7 lbs. is evaporated, the loss being divided as follows:—Loss of 10 per cent. by dropping through the bars; 15 per cent. by unconsumed nitrogen; 10 per cent. by insufficient heating surface; 18 per cent. from escaping gases, radiation, and blowing-off to get rid of scale=53 per cent. wasted: leaving 47 per cent. to be used for the engine. The remedies suggested to avoid this loss are mechanical firing, and regeneration, or returning as much heat as possible with the air and water supplied to the boiler.

The best boiler, theoretically, would be a long pipe made of very thin material enclosed in a long flue, the fire being at one end and the chimney at the other. The fire end, the hottest part, is in contact with the hottest water, where it is passing into vapour. As the flame advances along the flue, at the other end it has imparted all its heat to the water, excepting just what suffices to cause the chimney draught. The feed-water is supplied at the chimney end, gradually advancing to the hottest or fire end, and receiving all the way an increase of heat, not returning to a cooler place to give up its heat again. Though there are objections to this form the nearer a boiler approaches to the principle of its construction and setting the greater will be its efficiency—that is, the flame and heat advance in one direction, the feed-water advances in the contrary direction, the result being economy of fuel, and the least wear and tear of the material.

The oldest form of boilers, such as the externally fired, spherical, balloon, wagon, and haystack, were only used for steam at a very low pressure. Even at that time attempts were made to utilise the gases escaping from the fires by the use of internal flues. When high pressure steam was required the plain cylindrical boiler was invented. These are now made in considerable differences of dimensions, in lengths of 60 ft. or more, and small diameter, with flash flues; or in lengths of 30 to 40 ft., 5 or 6 ft. in diameter, with either flash or wheel flues. The disadvantage of vessels so large is that the mass of water in advancing from the cool end to the other has all to be brought to the heat of evaporation before much steam can be given off. The French, or elephant boiler, has separate flue tubes, and is intended to avoid the disadvantage of large water space. The advantage of small tube boilers—such as Hancock's, Howard's, Roots', Bellville's, and others—is that they allow of using thin material and small water spaces. The difficulties this type of boiler have to contend with is the deposit, and the circulation or advance of the feed water. The success of the Cornish boiler as erected in Cornwall was due to the slow and perfect combustion of the fuel, the flues so made that the sectional area was just sufficient for the draught, and the sides so near that the reflected heat of the brickwork acted in assisting the work. The need of inspection being now universally recognised, true economy consists in so constructing the flues that they may be easily traversed, and the points of contact with the brickwork so made that each seam of the boiler may be seen and accessible to an Inspector.

The result of evaporation in the boilers in common use, and their usual setting in average practical duty, compared with the result by careful experiments, is estimated as 9 lbs. of water per 1 lb. of fuel in careful experiments, and 6 lbs. of water per 1 lb. of fuel in practice. The Lancashire boiler when properly seated gives very good results, but the writer considers they are made of too great length, 30 ft. long and 7 ft. diameter being commonly used. With a boiler of this size the flues at the exit end are usually coated with soot, indicating that the products of combustion have too long distance to travel; he has for some time adopted a length of 24 ft. as sufficient for either one or two flued boilers, and has found them equal in efficiency to the longer boiler. Many follow an injudicious practice of building boilers in a large mass of brickwork, and thus pave the way to external corrosion; others place internally fired boilers on broad side walls, or on a broad middle wall of 18 in. thickness. It is impossible for an Inspector to examine thoroughly the condition of the plates in contact with the brickwork in such cases, however anxious he may be to ascertain their real condition, as it often happens that the plates apparently are in good order until the brickwork is removed, when they are discovered to be considerably decayed, and in some cases corroded nearly through. The side walls should be not more than 4 in. in thickness, with loose bricks at the ring seams to facilitate examinations. Besides the construction of flues in such a manner as to radiate heat from the brickwork to the boiler, the formation of the fire-bridge contributes much to economy in fuel by causing the heated gases to impinge against the under side of the cylindrical boiler, not allowing them to pass away in an unlimited space, and thus lose much of their heating power. By these arrangements much less grate surface is required, and a corresponding saving of fuel is effected. Mr. Morison promises in his next and concluding part to deal with boiler construction. The paper was accompanied with complete sets of models and diagrams, illustrating the various forms of boilers, and the most advantageous modes of setting them.

M. E.

CHEAPER COAL FOR THE METROPOLIS.

SIR,—I perceive that in the *Mining Journal* of Saturday notice is taken of the meeting of Northern Coal Proprietors in London, at which it was decided to adjourn for the purpose of collecting a greater number of owners together. The object in view is to determine as to the best method of bringing coals to the London market direct to the consumers, and thus dispense with the middlemen, or coal merchants, who have been for many years masters of the situation. To effect this there would seem to be two courses for adoption—the establishment of co-operative action on a large scale, or agencies in direct connection with the different collieries. The first-named course might be extended, and would be accomplished without business risk or trouble. The second course would, I apprehend be somewhat more difficult, because there would be need of great wharfage at the various termini of the railways; and it must be remembered that the coal merchants have already secured space for wharfage from all the railway companies. Still, no doubt, obstacles are to be overcome, and would be overcome in case it were finally resolved amongst coal proprietors in their own interests and the interests of the consumers to deal with them as far as possible directly.

Dec. 7. A COAL PROPRIETOR.

CHEAPER COAL FOR THE METROPOLIS.

SIR,—The movement in favour of supplying the coal consumers of the Metropolis direct from the collieries, without the intervention of the middlemen who so seriously interfere with the interests of both coal owner and consumer, is one which deserves the warmest support of the millions who dwell within the ten mile radius of St. Paul's; but the great question is, how can that movement be carried to a successful issue. The combination of coalmasters proposed at the recent meeting appears ill calculated to effect the object in view, since it would merely be transferring the monopoly from the middlemen to the coalmasters themselves, who are unlikely to forego profits which the middlemen have proved to be obtainable. The establishment of a separate agency by each coalmaster would be so costly that even if the coalmasters received only the same amount per ton as at present the consumer could be offered little or no advantage; and as to one paid agent to represent all the coalowners, it is difficult to comprehend how harmony is to be secured, or how the agency could be organised so as to give equal satisfaction to all concerned. Without absolute satisfaction was secured to all there would soon be underselling or withdrawal from the league, which would leave the consumers in a worse position than at present.

The co-operative system embodied in the project of the National Coal Supply Association noticed in last week's *Mining Journal* appears more feasible, but I am doubtful whether the 250,000*l.* which it is proposed to raise would prove at all adequate for entering upon a competition with the middlemen's ring, which would, of course, bring all its energy to bear to crush the Association. But why could not the Coalmasters' Association utilise the National Coal Supply Association as their agents, by undertaking to supply them with any quantity of coal they could sell for them at 10 per cent. on the net cost at the pit's mouth? Thus, supposing the net cost to the coalowner at the pit's mouth to be 6s. 8d., the National Coal Supply Association would pay 7s. 4d., and the coalowner would further undertake to deliver his coal in trucks at any required metropolitan station upon being reimbursed his actual out-of-pocket payments for doing so. The National Coal Supply Association's part of the business would consist in obtaining the orders from the consumers, undertaking the cartage, and collecting the money. They would, of course, sell as cheaply as possible in order to secure the business; but even assuming that they charged a little more than absolutely necessary, the consumer would not be adversely affected, as the Association being co-operative would receive back any surplus paid in the shape of dividends upon their shares. There is, unquestionably, a large field for enterprise in this direction, but some care is necessary in its development.

Cannon-street, Dec. 9. CONSUMER.

MEETING OF NORTHERN COALOWNERS IN LONDON—NATIONAL COAL SUPPLY ASSOCIATION—CHEAPER COAL FOR THE METROPOLIS.

SIR,—Such has this last week been brought under the notice of the metropolitan coal consumers in a leader of the Morning Advertiser, and editorial articles of the *Mining Journal* and Colliery Guardian. It is stated that "an important meeting of northern coalowners was held on the 29th ultimo, at Morley's Hotel, to consider the price of house coal in London. It was stated that the average price of best coal in the Pool was 16s per ton, and the retail price 25s., and that this represents an excessive profit, added to which the coal sold ex ship is pure, whereas the coal retailed is usually mixed." Now, without deciphering the intricacies of the Coal Exchange under the head of rebate, which does not affect the present case, as 16s. is stated to be the average price paid for best coal ex ship, I shall prove that the coalowners are entirely wrong in their premises, and that in lieu of their attempting to displace the coal merchants, they—the Durham and Northumberland coalowners—are quite incapable of supplying the consumers on equal terms with the Yorkshire, Derbyshire, and Nottinghamshire coalowners, the latter having an advantage of 7s. a ton less price from the pit's mouth to consumers' premises than from Durham and Northumberland, as shown in my exhaustive correspondence in the dual special organs of the coal trade, the *Mining Journal* and the Colliery Guardian. The London coal merchant has to pay, in addition to 16s. ex ship, lighterage, landing, and loading vans, breakage, cartage, and sacks, 7s. 3d. a ton—bringing the cost price up to 23s. 3½d., which at 25s. does not leave him 7½ per cent. profit on his outlay, not including wharf, storage, interest, and bad debts, advertising, &c., charges.

My letter in the *Mining Journal* of April 27, 1878, gives the following remakable emanation from the North of England United Coal Trade Association, dated Newcastle-upon-Tyne, April 13, 1878:—"It is really desirable that the public should know that the prices which they are now being charged for seaborne coals are actually about 10s. to 11s. a ton above the net price paid for the coals by the coal merchant—at present 16s. 6d. to 17s. 6d., by certain reductions 15s. 2d. to 16s. 2d.—for which they are charging the public no less than 26s." I stated—"Can it with any consistency be held forth to the uninitiated large and small consumers of seaborne coal that their coal merchant is charging them 10s. to 11s. a ton above the net price when, as per evidence before a Select Committee of the House of Commons on Coal in 1873, it was stated on June 18 and 19 by the very largest coal importers and merchants that they have to pay, in addition to cost, freight, and insurance, 7s. 4d. a ton for lighterage, landing, loss by small, and cartage," which may be supplemented by metage, wharfage, detention or demurrage of barges, sack hire, allowances, interest, bad debts, office and yard expenses, advertising, &c. On adding up these items the balance is by no means as represented, but more like only a tithe of such north-country bold assertion, and considering the nature of the trade selling half a ton and upwards far from adequate remuneration to many in the trade,

The metropolitan coal merchants have it in their power to suppress the sale of Durham and Northumberland coal by co-operation with me in supplying the Metropolis with seaborne Yorkshire, Derbyshire, and Nottinghamshire coal at a saving of 7s. a ton on the former descriptions.

In my next I shall prove from deduction of the premises set forth the utter fallaciousness in the press of a saving being held out to consumers by the National Coal Supply Association—*in posse* of 25 per cent. W. JOSEPH THOMPSON.

Little Tower-street, Dec. 10.

IMMENSE INCREASE OF REVENUE TO RUSSIA—HYPER-REHABILITATION OF FINANCIAL RESOURCES.

SIR,—The statistical returns edited by the Imperial Mining Department state—"As regards iron, the quantity discovered in the Oural alone would suffice for an unlimited production, immense forests being contiguous and ample for any extension." It is quite supererogatory to dilate upon the superior quality of the Oural iron for steel, &c., the world-renowned Russian sheet-iron surpassing any such indigenous or imported into this country. The chief cause assigned for the comparatively restricted output is want of cheap transport. By means of a gravitation railway an immense increase of revenue will accrue to the Imperial Exchequer and to owners of mining property. Abundance of carboniferous deposits is found in Russia, the precited report stating—"Indigenous coal is consumed on an extensive scale." From the development of the Oural and Siberian coal fields the entire import of British and foreign coal into St. Petersburg can be displaced by the almost nominal cost of transit by a gravitation railway. Magnificent deposits of copper exist in abundance in the Oural. Russia's imperious necessity is cheap transport, which can only be attained by means of my system of an undulating or gravitating trajectory, constructed entirely of wood with a purely nominal amount of iron or steel, all of indigenous produce. The Oural Mountains rank amongst the richest metallurgical deposits of the globe, which can alone be rendered available by the means proposed. There is a striking analogy between the Oural and the Yorkshire, Derbyshire, and Nottinghamshire mineral deposits, viewed from a transport standpoint. Before 1845 London was supplied with coal, sea-borne from Durham and Northumberland, but with the installation of railway communication from said coal fields the inland coal trade by rail has increased from 8000 tons in 1845, to 5,596,267 tons in 1878, the last official return. Of course the immense capital invested in railways in the United Kingdom at the end of December, 1878 (698,545,154*l.*), and other attendant causes, render it impracticable to successfully carry out my system. As it is imperative to submit every similar undertaking to Parliament, the powerful and multifarious interests representing in the legislative chambers directly and indirectly the railway interests are sufficient to debar any incipient step being taken towards the introduction of a system which will ultimately be carried out with the advent of an amended system of Government. It is, therefore, of paramount importance for the Imperial Government to institute a Commission of Enquiry into a system which is destined to settle the so-called Eastern Question, as not only will the Suez Canal be rendered denuded of resort, but Constantinople will possess no possible interest for this country. WM. JOSEPH THOMPSON.

Little Tower-street, Dec. 10.

CAPE COPPER MINING COMPANY.

SIR,—It must be very pleasing to the shareholders of the Cape Copper Mining Company to read "W. W.'s" letter of the 1st. inst., in last week's Journal, stating the dividend for 1878 to have been 3*l.* 5*s.* on an average price of 11s. 2d. per unit, or 2s. under the present alleged average price of 13s. 2d. per unit. This, I think, requires some correction. "W. W." appears to be somewhat sanguine in his expectation of 40,000*l.* additional profit for 1879, for if he will refer to the last five printed monthly reports which the company very wisely distributes among its shareholders he will find that 5075 tons of ore are announced as sold for approximately 82,630*l.*—equal to 16*l.* 5*s.* per ton—with unitage prices ranging between 10s. 5d. in July and 12s. 7½d. up to Nov. 15, giving an average of 11s. 2d. and not 13s. 2d. per unit; but as these 5075 tons of ore are forming but a part of the ore produce of 1879, the remainder, it is hoped, may obtain higher prices.

I am, however, somewhat surprised that "W. W." appears to have overlooked the far more important circumstance that the last two reports of the company give only 11s. 2½d. and 12s. 7½d. per unit, as obtained for our 30 per cent. ores, whilst those of other mining companies of 20 per cent. less assay have fetched, according to public print, in October 13s. 1½d. and in November and December 13s. and 13s. 6d. per unit, or about 1s. to 1s. 6d. more than Cape Copper ores. If "W. W." can assign a reason for this apparently uncalled for disproportion he would earn the thanks of— S. S.

Dec. 10.

LAKE SUPERIOR MINES AS A FIELD FOR THE PROFITABLE EMPLOYMENT OF BRITISH CAPITAL.

SIR,—I read with great interest in the *Mining Journal* the remarks concerning the present condition of the metal market, and we are feeling its results. Here on Lake Superior the most shrewd business men even were feeling as though those foreign mines would continue to overstock the copper market to such a degree as to leave no possible hope for many years to come of seeing any life in copper mining. When we talk of mines and mining, however, as a general rule here we leave the celebrated Calumet and Hecla Consolidated out of the question, as that has proved itself even beyond a model of all copper mining we hear of, and if there be any such thing in a geological point of view as seeing into the solid rock this mine appears sure of maintaining its reputation for many years to come. In consequence, coupling this with the exceedingly low price of copper for the past few years, with which it has been almost impossible to make any ordinary mines pay expenses, capitalists in this country turned their attention to the celebrated Calumet and Hecla Consolidated, and, seeing they are doing so exceedingly well in that concern, it will be a matter of great difficulty to turn their attention elsewhere for a very considerable time. For this reason other mining properties here of very great promise are entirely neglected—properties that can be highly recommended to any mining capitalist without the least scrupulous feeling—and we have several mining men here of great practical abilities, well acquainted with these mines, who could and would gladly give any necessary information.

Seeing that English capitalists have turned their attention to many parts of the United States for mining, it is very strange to notice that they have not even paid a visit to this Lake Superior region, while in my estimation, and in that of many other practical men who have seen the mines here, it is one of the greatest mining districts in the whole world yet known. Some people, however, may say that heavy amounts of capital have been invested here, and in many instances to little purpose. Very true, we will admit, and reasons why it has been so can be given. In the first place, the country was a dense forest, woods, and not a road in any direction, nor a house of any kind. Houses had to be built, roads had to be made, and supplies of all descriptions had to be brought here at a very heavy cost to the companies before mining could be started, to say nothing of those who were put in charge of mines, and who knew nothing about mining. The most practical was, as we term it, a greenhorn to native copper mining. Even the best geologists of the day were completely at a loss. I heard them say that native copper could not exist where conglomerate is, while the largest quantity of copper per fathom has been found in and upon the conglomerate belts. In fact, the once celebrated Minnesota and National Mines' lode is a belt of conglomerate, and the Calumet and Hecla Mines' lode is principally conglomerate. Now we have good houses of all kinds necessary for the use of the mines. We have sufficient land cleared, and excellent roads made where necessary, good harbours for shipping, and a rail way from all parts of the United States to within 30 miles of the mines, and those in charge of mines here are men of experience both in a geological and practical point of view.

In addition to all these disadvantages which mining companies at first laboured under, there was a strong idea afloat with a great number that it was not necessary to go to the expense and time of practical mining to get at this native copper, but that it could be quarried out at very trifling expense. But now we have the mines in

excellent condition for development, the copper is here, men of all classes who are fully competent to take hold of the work are here, and all that is necessary for profitable mining is a little capital to make a start. In fact, mines here are in better condition for mining than those in Cornwall, owing to our shafts being straight from top to bottom, instead of being sunk off the lode perpendicular for one-quarter to one-half the depth at first, and then striking the lode and sinking on its course (underlie), as is done in Cornwall. Our shafts are straight on the course of the lode, varying from 30° to 60° from perpendicular. This, with all the late improvements in machinery for pumping, hoisting, and for men descending and ascending the mine, makes a wonderful difference in the expense of mining, besides putting aside the endless troubles caused in the crooked shafts by rods and chains constantly breaking. Any information capitalists may require concerning our Lake Superior mines I shall always be at hand to give them to the best of my ability, and can direct them to others who are also prepared to do the same—men of great ability and experience in the Lake Superior mining country. Those who may come here to inspect properties would have the greatest attention paid them.—*Lake Superior, Nov.* 20. H. B.

CHONTALES MINING COMPANY.

Sir,—From the extreme importance of the matter which I brought before the meeting on Monday [a report of the proceedings appears in another column], not alone in my own opinion, but in that of the holders of very many shares, I ask you to insert in your valuable Journal a statement of what took place after the reporters appeared to regard the business portion of the meeting as concluded. Many of the shareholders in Bristol (and nearly 6000 shares are held by them) and from different parts of the United Kingdom were anxious that an additional director should be appointed on the Chontales board who had time at his disposal, and was a practical man in mining operations, an employer of labour and machinery, and, last but not least, a good financier. A gentlemen possessing these qualifications was asked to consent to be nominated by several of the shareholders. Having consented, in accordance with the Articles of Association we served a notice in due form. Having done so I communicated with our secretary at Gresham House. My letter was forwarded to our noble Chairman, and in a communication received from his lordship he says—"We would gladly accept an additional director if the shareholders so wished. We have yet to learn that that is the case." I did not think it necessary after that assertion to send to each shareholder, or to ventilate the matter through the medium of the Journal, knowing that proxies would come in, and the number of votes of sufficient importance to convey the opinions of some of the largest shareholders. The proxies I forwarded (between 6000 and 7000), and from a letter I received which represented the wishes of two of the shareholders, whose votes unitedly amounted to over 8300. This gentleman writes—"I wrote the directors to say that we would be glad if Mr. Wethered was admitted to a seat at the board." It will appear very evident that a wish was entertained by shareholders who held nearly 15,000 votes. Now for the sequel.

I introduced Mr. Wethered to the board previously to the meeting taking place, and their discussion appears to have been somewhat animated, so much so that I was given to understand that the directors had expressed their opinion that they would rather bodily resign than that Mr. Wethered be admitted to the board. Mr. Wethered is very straight and expressive in his opinions upon convictions entertained where he believes anything to be irregular, and goes to the bottom of the subject, however painful the probing of the wound may be, and then he resorts to expedients to heal it. He does it independent of the pain he gives.

At the meeting, after the report was read and adopted, the retiring directors re-elected, I then described the qualifications Mr. Wethered possessed, and the desirability of his being elected, giving the directors and the shareholders distinctly to understand that he was there not as a volunteer but solicited, and I wrote to the directors on the morning of the meeting to that effect. I proposed Mr. Henry Wethered, of Ferncliffe, Bristol, as a suitable and desirable person as a director on the Chontales Company, and was seconded by Lieut.-Colonel Percival, one of the directors, and I here take the opportunity of thanking him for his having done so. Mr. Wethered asked to be allowed to make some remarks which were to this effect that he was not the nominee of Mr. Palmer, that he had heard from enquiries that the property was a good one, but had been badly managed, and the consequences that would follow that if matters were not looked after differently to what they had been, consequences of a serious nature would inevitably follow, upon which Mr. Hill (one of the directors) rose to object to the appointment of Mr. Wethered, assigning as a reason that the charges brought against the directors it was evident that they could not work harmoniously together, which opinion I believe would have been found to be correct, upon which Mr. Wethered rose and stated he should object to take a seat on a board, stating that his remarks respecting bad management that had been by the directors who opposed him construed to the bad management on the part of the board, but that it was not so stated by him that he had not come forward from any wish to be on the board, that if he had been selected he should have gone to the foundation. Here I give my opinion as regards the management at home, I believe the losses we sustained from September, 1878, to July of the same year —1230*l.*—in consequence of machinery not having arrived that was ordered August, 1877, when the machinery might have been delivered at Southampton after the order was given in one month by a highly respectable firm. I leave the shareholders who may read this letter and my opinions to judge to whom the bad management belongs, we have been told that had the machinery been at the mines we could not have reaped any additional advantage; this I am convinced is not the case.

After Mr. Wethered had expressed his determination to retire, his lordship then rose and made some remarks to an objectionable circular that I had sent to the shareholders that the shareholders had not written more than two letters up to that morning in favour of Mr. Wethered's candidature he spoke of not knowing much of mining himself, and had hoped that I should have withdrawn the proposal of Mr. Wethered; I reminded his lordship of what on a former occasion had taken place, and of his expressing as to two Richmonds being in the field, that the circular he referred to did not emanate from me, but as to what I thought of that circular and the shareholders who had read it was another thing, I explained that Mr. Wethered had been solicited, and my letter of that day to the board fully explained that he was no nominee of mine, but under circumstances that he was obliged to be by some one nominated.

As to the remarks the noble chairman made as to his knowledge of mining, we as shareholders, value him for the other duties he has to perform as chairman, which he does to the satisfaction of the shareholders generally. On board ship it would not be practicable for every officer to be a captain; whilst he would have one duty to perform the remaining officers would have others. As to our mine the noble chairman has his duties, and also the other directors, and we considered they should know something practically of mining and its operations. I ask the question without wishing to say it offensively—Are the directors on the Chontales board practically acquainted with mining operations when gold and silver are sought for? I believe we have as directors gentlemen of the greatest integrity, otherwise how easy would it be for a director or a subordinate to write to a manager or cause to do so, and instruct him to give bad returns for a few consecutive occasions, to enable (supposing such was the case) larger shareholders to have the opportunity of depriving others of their rights. We have been taught a lesson in Bristol as regards directors, who are all undoubtedly gentlemen, but from what has transpired knew nothing about banking business, and thousands at the present time have to suffer. I refer to the local bank failure. Had Mr. Wethered been one of the directors of that bank four years since I feel convinced that he would have saved that gigantic concern from ruin. Mr. Parke Pittar referred to his being the largest shareholder in the company, but in referring to my list, furnished about May last, I find 2177 in his name and 711 in the name of Parke Pittar and others, so that unless he has purchased largely since there are other shareholders who hold individually considerably more. Mr. Pittar read a portion of a letter he had received from Mr. White, the manager at the mines, not as a director but as a shareholder. If Mr. Pittar has the opportunity of receiving correspondence from our manager I should like to know why the secretary should have the power to write the manager prohibiting my doing so. Where is the line to be drawn between Mr. Pittar and myself?

When at the office on Monday I had some conversation with our respected secretary, and he referred to the objectionable way in which I had instructed shareholders to cancel the names of the noble Chairman and Mr. Parke Pittar. "Waste not, want not" is an old maxim, and as the stamps would otherwise be useless, and would have to be provided by myself. I may say this year I have attended at meetings in London on four occasions. The circular I issued when the confirmatory meeting for the winding-up of the company was to be held, and the postage and printing had to be borne by me individually. I ask if I am not justified in adopting economy, whilst at the same time it was without the remotest idea of showing any disrespect to Earl Nelson or Mr. Parke Pittar. The meeting concluded by a vote of thanks to the Chairman, proposed by Mr. Wethered, and some complimentary remarks followed, in which the Chairman spoke of Mr. Wethered in very high terms. Our position at present, our inability to crush more ore, was represented to arise from the want of means. Through life, as a rule, I have found that where there is a will there is a way. What is to prevent our manager sending the melted gold of one week's production to Libertad? From what we have understood there is no difficulty of obtaining specie or exchange for gold if I recollect right. Don Juan Vargos he preferred it. I refer to the demand he had on the company on the arrival of Mr. White. Libertad is about 15 miles from the mines. I presume the natives are paid monthly, though it may be somewhat irregular adopting this system for a short time. Would it not be better, and especially now we have a reduction officer, to look after our interests as regards the gold?—*Bristol, Dec.* 11. William Ball Palmer.

COPIAPO MINING COMPANY.

Sir,—In reading over the report of this company in last week's Journal I find there is an error in the quantity of ore said to be raised in the lode just cut at the bottom of Fletcher's shaft in the Dulcinea Mine. It is there given as "60 tons" to the fathom; it ought to be "6 tons."

I take this opportunity of referring likewise to your report of the proceedings of the general meeting, where it is stated—"Mr. Holland, in reply to a question, said that he considered the output of ore after Mr. Hall's arrival would be about 400 tons per month, which would leave a profit of 3*l.* to 4*l.* per month." What Mr. Holland did say was that he expected the profits would be 3*l.* to 4*l.* per *ton* of ore, not per month.—*London, Dec.* 10. R. S. Archbold, Secretary.

THE FLAGSTAFF MINING COMPANY OF UTAH.

Sir,—I am glad to see that the price of the Flagstaff shares keeps up, as it shows that the attempts to bring discredit on the company have no hold on the public. I hear that some important communication will be made to the shareholders in February next, and in the meantime I hope they will not part with their shares at the present prices. The mine is reported to be as rich as ever. The workings are now down at a depth of over 1000 ft., and it is found that the deeper the workings the richer the produce. I am informed that the profits from the mine since the company lost control over it have been about 30,000*l.* a-year, and as the directors have succeeded in their lawsuit in the American Courts, the day may not be far distant when the shareholders will have the pleasure of receiving a satisfactory dividend. My advice to the shareholders is not to part with their shares at the present price. I know there is a strong fancy for them on the London Stock Exchange, and one broker is a buyer of 2000, but cannot get them at his limit. Before many weeks are over we shall see Flagstaff shares at 3*l.*, or even 4*l.*

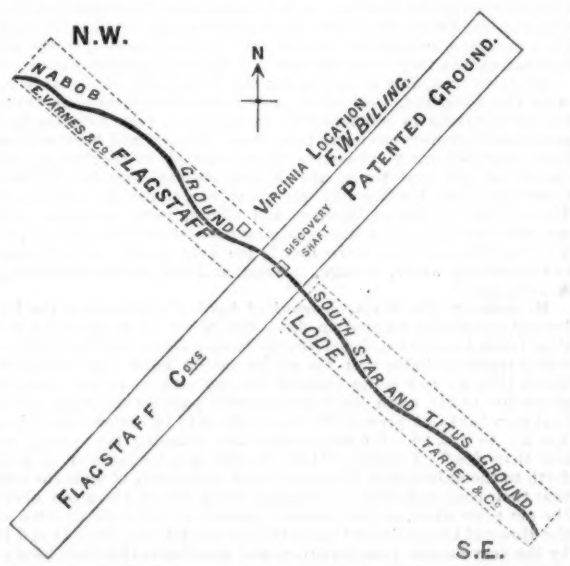
Dec. 9. A Shareholder.

FLAGSTAFF SILVER MINING COMPANY.

Sir,—It has, I believe, been rumoured that Mr. Billing has lately been making overtures for selling the portion of the Flagstaff lode—100 ft.—which he and his associates bought from the Sheriff some years ago; but as these few feet were insufficient to get up an excitement upon, he was also willing to sell the "Virginia" location, which is nothing more than a shaft sunk to communicate with the old trespass workings of the Flagstaff Company upon that portion of the lode owned by the Nabob Company (E. M. Varnes and others). The following, from the Salt Lake Daily Tribune of Nov. 4, shows that Mr. Billing's trespass has been stopped, and that he is mulcted in damages, which have to be ascertained in regard to the ore he has taken out:—

E. M. Varnes et al. *v.* F. W. Billing; trial before the Court and case submitted; judgment for plaintiff as to location and rights on premises; question of damages not passed upon, but referred to parties to agree. Judge Hunter yesterday rendered a decision in the case of the Nabob *v.* the Virginia Mine. The Court held that the Nabob had priority of location and had complied with the law in relation to record and survey; that the defendants (Billing and others) were trespassers, and should account to the owners of the Nabob for the quantity of ore they have taken from the mine, but that there was not sufficient evidence produced to show what the amount of ore extracted was, nor its value. The Court, regarding the matter, recommended that the case be either referred to some proper person to take testimony in this particular, or that a special jury be sent to examine the premises and assess the damages.

It would, therefore, appear that Mr. Billing has no mine to sell, unless the worthless 100 ft. of Flagstaff can be called one. The annexed diagram shows the position of the owners of what was once supposed to belong to the Flagstaff Company, and to whom that company are indebted for a very large sum of money for ore extracted by them beyond the limits of their patent, as shown in diagram:—



It will be readily seen now how the litigation has arisen, and why the Flagstaff patent, which London directors required for title, was applied for at right angles to the lode, instead of on its course and covering it; by this means the opposition of prior locators on the same lode was done away with. The original United States Survey for patent was correctly made upon the course of the lode, and opposition was filed, and then the new survey which merely crossed 100 ft. of the lode appeared, but "by what conjuration or by what mortal charms" this new temporary dodge was effected will probably remain one of the mysteries of Washington District Court, known, perhaps, only by Nelson Patrick and Robert Ingersoll. Anyway, the unfortunate British shareholders have got "scooped" badly, but have still managed to accumulate a respectable amount of debt upon their 100 ft. Salt Lake.

RICHMOND CONSOLIDATED MINING COMPANY.

Sir,—The accompanying letter, which I have just received from Mr. Purvis, a large and old shareholder in the Richmond Company, will be of interest to the other shareholders and to your readers generally. It is necessary for me to state that Mr. Purvis, being about to pay a visit to his son in the Sandwich Islands, and having to pass through San Francisco, determined to go to Eureka on his way, and see the Richmond Mines and Works, and obtained from me a letter of introduction to Mr. Probert. I doubt the accuracy of Mr. Purvis's figures, but I send them to you as I received them from him.

Coleman-street, Dec. 11. George Hopkins, Chairman.

Sir,—I beg to acknowledge the due receipt of your favour of Sept. 3, enclosing a letter of introduction to Mr. Probert, which I duly presented, and was most kindly welcomed by him and shown all that I desired to see of the smelting, the refining, and underground workings of the Richmond Company. Of course, my impressions could be but general; but, at the same time, they are decided and distinct that it is a well-managed concern, and that in Mr. Probert we have one who is most attentive and assiduous to the duties of his position, and thoroughly versed in metallurgy—one who, moreover, evidently commands the respect of the men, as shown to me by their invariably touching their hats when addressing him—a trifling incident in itself, but which mere money could not buy in the United States—and a finer body of men physically, taking them collectively, I never saw. It is a good employ; the men know this, and the company have always the pick of the district. I particularly noted the careful way in which every particle of ore and fuel used in the works was weighed and re-weighed at the various processes, as well as the several results.

Mr. Rickard left for San Francisco the day that I arrived at Eureka; but I explored along with the underground manager all the active works down to the 6th level, and saw the enormous amount of dead work that has to be undertaken in order to win the profitable ore. Like many of my fellow-shareholders I was apprehensive that such masses of ore as have been already extracted must have about exhausted the mine. I am, however, now reassured on that point, as up to this date there has been worked 360,000 square feet, while there is in all 900,000,000 (?) to work over, if my computations are correct. Of course, it may cease to yield paying material any day; but, on the other hand, it is as quite likely to be as productive as it has been hitherto—indeed, I was assured that if the mine were to give out entirely the works would still pay a respectable dividend to the shareholders by smelting and refining for neighbouring mines; a very profitable business, as they only receive value for the precious metals—the lead, &c., remaining the absolute property of the company.

You are quite at liberty to make any use you please of this letter. The publication of it, or any extracts you choose, with my name and permanent address, would, at all events, be a voucher for my belief in my statements, and might re-assure timid holders.

John Purvis (of Kinaldy, St. Andrew's, Fife).

Hamakua, Hawaii, H.I., Oct. 26.

MINING IN NORTHERN MEXICO—No. III.

Sir,—Lying about six leagues north-west of the historically famous gold mine of Topago is the mineral district of Yoricarichic. The existence of ores of good quality was known long ago, but only recently were the ores worked, on account of their exceeding rebellious nature. But the adoption in this country of the lixiviation process (leaching with hyposulphite of lime and precipitating with sulphide of calcium) has rendered the working of this class of ore very profitable. In the mine of San Rafael, Yoricarichic, work was commenced in May, 1878, by three or four men. The owners did not spend $100 before reaching paying ore, and from that date until now the mine has paid all expenses, and continues doing so, although they have to pay $26 per ton freight to reduction works, and an enormous discount off assay value. On the mine they have stacked over 300 tons of ore, which assays from $60 to $85 per ton, with the idea of shortly erecting reduction works on the mine, for which purpose there are great natural facilities. Ten leagues east of this we find another promising young mine, with the somewhat fanciful name of Paz cou los Muertos, and situated in the mining district of Hurnapa. I visited this spot in April last at the solicitation of the owner. The mine was then only some 30 ft. deep, but showed every sign of a fruitful vein. Within these last few days the owner has written to me, saying:—"I am now down about 100 ft. from surface, and the lode improves in width and richness. All vein matter goes through the mill, and assays over $100 per ton. I have taken out a small quantity of ore that assayed over $7000 per ton."

Work has been again commenced in Tetamoa, which has remained idle since the expulsion of the Jesuits. The lodes are very large and wide, containing silver and gold. There is an immense quantity of ore in sight, averaging from $45 to $100 per ton for silver and gold. These ores give excellent results when concentrated on a Frue vanner. The loss is so small as to recommend at once their adoption. I believe the present owners intend erecting one. This mine, with a mill capable of crushing 20 or 30 tons daily would yield handsome profits. There is a very wide field in this country for private mining companies whose capital would be from 4000*l.* to 8000*l.* There are many mines which would pay well with a 5-stamp or 10-stamp mill.

The districts above mentioned are all in the State of Chihuahua, and remarkably free from political disturbances and social disorder. Any machinery can be easily obtained at a very short notice from San Francisco. The distance from the coast is very little, ranging from 45 to 58 leagues. Plenty of effective and useful labour is to be had at low prices. There are also great natural facilities in most of the mining districts—plenty of wood and water. I unhesitatingly believe that the time will come when Mexico will again be first on the list of the silver-producing countries in the world, and to-day I believe no country offers fairer inducements to investors in honest and legitimate mining enterprises. Minero.

Alamos, Oct. 20.

ORNAMENTING METALS AND ALLOYS.

Sir,—Inasmuch as everything which has a tendency to bring metals more largely into use for general purposes must be advantageous to the miner, I think some little attention might be given to the new system of ornamentation proposed by Mr. T. White, of Birmingham, which would combine cheapness with elegance, and be applicable to a large variety of purposes. I am quite aware that a similar style of ornamenting has been used with wood, but I believe that for metal it is quite new. He first places two sheets of different metals—say, copper and German silver—together, and on the top one he traces the ornament to be produced; he then saws out the ornament, and the pieces cut out from one sheet of metal are inserted in the corresponding openings in the other sheet of metal, and fixed in their places by brazing or otherwise. Two designs are thus produced, the ground being formed of one of the metals, and the ornament or design of the other. Thus, supposing a star to be cut from each of the plates, and that cut from one plate fixed in the cut away portion of the other, there would be produced a copper plate with a German silver star, and a German silver plate with a copper star. The most varied and complex designs can be produced in this way, and more than two metals may be employed, so as to produce designs in metals of more than two colours.

Instead of cutting out the designs by saw piercing, cutting tools worked in a press may be employed where the same design has to be many times repeated. Where a costly metal or alloy is employed it may be thinner than the less costly metal, which in this case forms the foundation or ground. In this modification, instead of piercing the less costly metal, he only produces by the pressing machinery a depression of a sufficient depth to receive the thin costly metal, which is inserted and hard soldered in the depressions in the less costly metal of the foundation or ground. The compound ornamented metallic sheet obtained in the ways described may be further ornamented by embossing, chasing, engraving, enamelling, painting, or colouring, and may be fashioned into articles by the processes of stamping,

spinning, or pressing, or by hand processes—such, for example, as beating. When the ornamented plate has to be treated by any of the processes last referred to it is necessary to take care that the metals combined have approximately the same malleability and ductility, otherwise the treatment to which the compound metal plate is subjected may produce a distortion of the ornament or unequal expansion of the plate at different parts.

By using such alloys as aluminium gold or gold-coloured brass, such as can be made with copper and tin, and soldering into the indentations pure silver, first embossed and engraved, the most beautiful ornaments could be produced at a price which would place them well within the reach of— ONE AND ALL.

Ashburton, Dec. 10.

THE PANULCILLO COPPER COMPANY.

SIR,—I am at a loss to understand the present low price of Panulcillo shares. They are quoted about 5*l.*, but I consider them worth considerably more, not only by looking at the brilliant prospects of the mine, but by comparing such prices with those current for other copper shares. I have now more especially in view the shares of the Rio Tinto Company. They are nearing par, and what are the prospect? To pay 10 per cent. would require 225,000*l.* net profits per annum, and according to the last report no such profits are forthcoming. In fact, after providing for interest and sinking fund on nearly 3,000,000*l.* (say 3,000,000*l.* sterling), there only remained a small balance, and there is the loss of former years to be made good. It is quite evident a very long time must elapse before the Rio Tinto can earn 225,000*l.* net profits per annum, over and above the charges for the debenture debt. Now, if Rio Tinto shares with no other prospect than at best 5 per cent. dividend in a couple of years stand nearly par, what must Panulcillo be worth, holding out prospects of dividends at the rate of 25 per cent. per annum and upwards? Without fear of contradiction I say honestly 7*l.* to 8*l.* at the least. It is evident that the present price of Panulcillo cannot last long, an important rise in them is imminent, and those who want to buy have not a day to lose. CHILI BAR.

ROCK-DRILLS

SIR,—Mr. Barkell has taken up our challenge, and informed the mining work that an Eclipse drill has been put to work at the Ohio Mine, Isle of Man, and afterwards given up. We do wish to impute untruthfulness as one of the failings of Mr. Barkell, but prefer to think that he has erred through his usual failing when writing—ignorance.

If Mr. Barkell had only taken the trouble to make the most superficial enquiry he would have found that the drill supplied to the Ohio Mine was an Ingersoll and not an Eclipse, but that gentleman much prefers in his usual blind way to show his ignorance, to say the least of it, by publishing untruths for the benefit of the public, who can now believe anything that comes from such a source, or not, as they think proper. Perhaps Mr. Barkell will evince sufficient gentlemanly feeling as to apologise through your columns for the unwarrantable statement he has made. HATHORN AND CO.

22, *Charing Cross, London, Dec.* 11.

ROCK-DRILLS.

SIR,—I do not purpose occupying your columns by further contradictions to the statements of Messrs. Teague and Willimot more than to assert again that my statement is perfectly true—that no Darlington machine was ever entered at any time for trial. Mr. Harry Teague says "a notice of such purposed trial appeared in several of the local and other newspapers, also on the circulars and large bills in connection with the Mining Institute." This is untrue in every assertion. I have the large bill as well as the small circular before me; there is no mention whatever of any Darlington drill.

As regards the pressure of air at the trial of the Eclipse—58 lbs. per inch—I assert this is an impossibility, as any sensible man must see, unless the Eclipse machine will consume all the air a 20-in. engine will compress. Mr. Teague may take his choice of alternatives. His knowledge of the ground driven and driving in our 225 fm. level is as worthless as the statements throughout his letter. No trained mechanic accompanies the Darlington drill, nor do we require a smith's fitting shop and two men alongside our compressor, whose whole time is spent in keeping the thing going as across the road. No breakage has occurred to, and consequently no repairs have been required by, the Darlington borers save one through throwing down the machine, which cost the miner who broke it 30s.

As to Mr. Teague's vocabulary, those who have read his letter may judge. Two words it is insinuated are in use at Wheal Agar. During the 15 years I have been connected with the mine I never heard them, and the agents assure me they have not. Every man or boy employed in Wheal Agar is treated with respect. It is evident Mr. Teague does not know the meaning of the word "slang." Let me refer him to a penny dictionary.

I do not require Messrs. Teague and Willimot's advice where to buy steel or anything else as they are well aware. No breakdown ever occurred in Wheal Agar boring plant, and could not, therefore, extend over some years. They seem unable to state facts, whether I know anything about boring machinery, whether I studied the question years before the Eclipse had an existence has nothing whatever to do with the question. The Eclipse is properly so called, if the trio of advocates can palm it off by obscuring the light of superior machines. Should I ever adopt the Eclipse in place of the Darlington I should merit the epithets of the trio, and become a suitable candidate for confinement. I am quite satisfied with the drills we use, their reasonable price, simplicity, entire absence of skilled mechanics to keep them running must commend them to all disinterested people. With regard to Messrs. Hathorn's acceptance of my conditions to drive our 225 fm. level, he evidently knows better—that his drill would be a total failure, I leave the trio who have only shown their total disregard of facts and pitiable ignorance on the subject they would shine upon Eclipse like. H. WADDINGTON.

Wheal Agar, Dec. 4.

P.S.—The Eclipse machine has an existence in the county not on any merit, but from the fact that Mr. Henderson took contracts, putting down his own plant, and thus saving the risk of loss and failure to the mines. Agents who had not confidence in themselves have obtained a deputy who is now trying to form a company to carry out his ideas. We all know how exceedingly good all these things are.

ROCK-DRILLING MACHINERY.

SIR,—The remarks made by Mr. Henderson, at a meeting held at Redruth, on Monday, are instructive, and especially so when read in conjunction with some of the correspondence on rock-drills which has lately appeared in the Journal. It would appear that the much-belauded Eclipse machine is not only incapable of supporting itself, but is actually such a source of trouble and expense to its employers as to necessitate the formation of a company to keep it going. Nor is this to be wondered at—for Mr. Anderson states that "an organised staff is necessary to properly carry out the work entrusted to them;" that "smiths' and founders' charges press heavily on them;" that "he wants to effect a saving in the number of duplicate or 'stand by' drills;" and to be able "to maintain a small fitting-shop with the usual machinery." I can quite believe him. I am sure he speaks from experience, and has evidently found where the "shoe pinches;" and, although he has three contracts running in close proximity to each other, and is himself living in the midst of his "organised staff," would be glad to transfer all benefits likely to accrue therefrom for nothing. Well, Sir, if this is the best that can be done with the Eclipse, even in such good hands as those of our experienced friend Mr. Henderson, what is likely to happen with mine agents of no experience in these matters, who may be induced by the extravagant untruths of interested parties to attempt drivages or sinkings by the same machinery. The fact is that complicated and delicate machinery will not do for our mine work. We do not want machines that can only be worked by especially skilled labour, and a "small fitting shop," duplicate or 'stand-by" drills, and "an organised staff" to keep them going. What we do want is a machine that can with confidence be placed in the hands of our ordinary miners working for ordinary wages, with a certainty that the machine will keep underground at their work for months without ever requiring to see a "small fitting shop" or to be set to rights daily by "an organised staff of skilled mechanics and workmen."

My experience of rock-drilling machines has been an extensive one. I have seen at least 20 different machines come into the market with a flourish of trumpets, each being guaranteed to bore a hole faster than any other machine ever invented; but they have all gone the same way, with ruin to their makers and inventors, and grievous disappointment to all who were foolish enough to listen to the statements of parties whose only object was to sell the machines and pocket the money. The suitable machine, however, is in existence, and has been doing its work regularly and unostentatiously for years. The results have been from time to time published in your pages, and are available to all who care to enquire. Wheal Agar can show results that have not been approached anywhere in Cornwall, while from Minera, Ballacorkish, Moonta, and many other mines, information is forthcoming from uninterested parties showing that the Darlington machine does stand to its work without repairs or skilled labour, and does enable ground to be driven by ordinary miners, without any specially organised staff, at a rate from three to six times as fast as it can be done by hand labour, and at a considerably less cost, everything included.—*London, Dec.* 11. JAMES D. THOMAS.

SILVER MINING IN CORNWALL.

SIR,—I am highly gratified to see by the *Mining Journal* that attention to this important branch of home mining industry and wealth is about to be practically and earnestly prosecuted by the Lady Ashburton Silver Mining Company (Limited). It is surprising that it has never been energetically practised before, seeing that partial and imperfect trials at Wheal Brothers and other places have yielded such encouraging and profitable results. It is well known that all the lead and many of the copper ores of the county are highly charged with the precious metal. Until a recent period the difficulty of separation, both at the mines and smelting works, prevented due attention being devoted thereto; now, however, both are greatly modified, the manipulations practised abroad being adopted with satisfactory results.

At the West Darlington Mine, near Penzance, silver ores were procured and sold, which fetched 1060*l.* per ton, and considerable parcels sold at 300*l.* per ton; the value of the mine, consequently, advanced enormously. The lode contained considerable portions of capillary native silver deposited on crystallised carbonate of iron in the vughs, the rest in the gossans, and not recognisable by the naked eye. At old Dolcoath, North Dolcoath, Herland, and some other mines in the Camborne district much silver ore has been found in gossans, and utilised at the Point Smelting Works by being reduced with lead. At Great Wheal Charlotte, St. Agnes, silver ore of extraordinary richness was found in a cross-course, several parcels of which sold at high prices; this variety was (muriate of silver) veritable silver ore. At Wheal Anna, near Helston, a copper lode was wrought on some years ago, the ore from which (fahlerz) was so rich in silver that the smelters valued it at as much for one metal as the other. At Old Shepherd's Mine, Cargoll, East Wheal Rose, &c., silver in large quantities has been procured from the lead and blende ores. Near Lostwithiel more or less silver has been found in nearly all the gossans. In the neighbourhood of Callington especially the geological conditions and the lodes are peculiarly favourable to and indicative of the presence of silver. This has long been a recognised fact. I well remember the *furore* at the time Malachi made his discovery of silver at the Wheal Brothers Mine.

A great advance in mining shares has recently taken place, owing to the increased value of metals. Mines producing ores of fluctuating rates are, of course, liable to vicissitudes. Silver is not susceptible to this particular influence. Great successes in silver mining have been witnessed in Colorado, Nevada, India, &c.

I could extend my observations on the subject of this letter, but I trespass on your space. I opine sufficient has been advanced to prove that although silver in quantities exists in Cornwall, the mining for it specially has not hitherto had an adequate trial, and that under present circumstances, and with the development of the Lady Ashburton Mine under the vast scientific improvements in mining, metallurgy, and management, it will become a permanently important branch of Cornish mining enterprise. I have deduced this opinion from the fact of the lodes containing silver ore being traversed by powerful cross-courses, which in all countries have been the chief causes of vast mineral deposits. A mining experience at home and abroad of nearly 50 years confirms these opinions.

GEORGE HENWOOD.

LADY ASHBURTON MINING COMPANY.

SIR,—In view of the interest felt both in this neighbourhood and elsewhere respecting the prospects of silver mining in the Callington district, I subjoin particulars of actual results achieved as regards output of silver ore, in the space of less than 18 months, from the mine in Harrowbarrow, of which the lodes run through Lady Ashburton sett. "Good wine needs no bush;" and I, therefore, leave the following figures, which I have obtained from a reliable authority, to speak for themselves.—*Callington, Dec.* 10. CONSTANT READER.

WELL LODE, HARROWBARROW (identical with Wheal Langford silver lode). Silver ore sampled from mine at Harrowbarrow, February, 1877, to July, 1878.

Date sampled.	Dry weight.	Produce silver.
1877.	Tons c. q. lb.	ozs. p. ton
Feb. 21	0 19 1 17	260
April 10	2 2 3 18	360
30	2 2 2 16	398
June 4	2 8 1 0	328
	3 0 0 0	56
	5 0 0 0	63
15	0 7 0 27	2495
22	3 10 2 0	424
	2 4 2 4	142
	11 1 2 19	74
27	0 15 1 24	1352
	0 6 0 14	538
July 12	0 11 1 10	742
	7 2 1 18	135
	3 2 2 4	1474
	0 15 0 21	205
23	2 2 3 7	240
	0 14 3 2	1158
	2 11 2 5	90
26	1 6 0 25	63
	0 19 1 14	64
	0 13 0 3	389
Aug. 8	5 9 1 11	54
	3 3 2 9	202
	1 1 2 16	594
	4 2 1 22	17
	1 5 3 17	19
	1 2 2 17	632
24	5 6 2 7	74
	3 17 2 0	109
	1 16 3 15	278
Sept. 6	3 3 0 9	175
	3 9 1 25	35
8	1 17 0 12	45
	1 7 1 4	64
21	7 5 1 17	45
	1 13 2 21	36
	1 16 1 4	17½
28	2 6 3 1	64
	2 3 0 0	80
Oct. 20	1 17 2 21	36
	2 16 2 19	80
	3 7 0 21	85

Date sampled.	Dry weight.	Produce silver.
1877.	Tons c. q. lb.	ozs. p. ton
Oct. 20	3 9 0 18	95
Nov. 1	3 8 0 22	93
	1 6 1 26	158
	0 19 1 18	56
15	3 2 1 26	100
	0 5 1 4	706
16	3 9 2 8	55
23	7 4 2 21	168
	2 7 0 24	147
Dec. 12	5 3 0 17	209
14	3 16 1 9	184
27	4 8 1 19	221
28	1 9 0 0	37
1878.		
Jan. 10	2 12 0 0	152
Feb. 6	3 9 1 1	128
14	5 8 2 3	213
March 7	0 13 0 3	2230
	3 5 2 21	280
	3 12 1 17	331
9	1 12 3 27	329
27	1 5 3 9	1604
29	11 1 1 22	347
April 12	0 4 1 20	8210
	1 1 3 20	1153
15	11 17 2 15	136
29	1 5 3 23	1574
	10 0 2 14	252
May 20	2 13 1 10	169
21	0 7 3 24	1821
28	6 19 1 11	169
June 3	0 6 1 20	1387
	3 17 3 3	91
8	2 19 1 16	91
	0 3 0 21	2118
14	2 15 0 1	304
	0 3 0 18	1861
July 8	2 13 0 22	127
	1 5 2 26	169
12	1 14 2 17	152
Total	Tons 238 8 1 20	

HOME INDUSTRY—NATIONAL WEALTH—SILVER MINING IN CORNWALL.

SIR,—In former letters iron, coal, copper, and lead have each been mentioned as products which have materially conduced to the wealth of this great country. Silver, too, has largely contributed thereto. This product has been generally associated with lead, and it is only in a few districts in the kingdom where rich silver ore has been found. The extraordinary rich silver lodes in the parish of Callington, in Cornwall, at the southern foot of Kitt Hill, have long been known to exist, and immense quantities of silver, some of it pure native and ruby, have been raised therefrom. It has been the marvel of many why it is that so much virgin ground remains unwrought. Private individuals have been in possession of some of these grants for many years, and we believe the very knowledge of their richness has induced them to hold their properties and privately work them. Capital is needed, and we are glad to see that an influential company has been formed for the effectual working of the Lady Ashburton Silver Mines. The extent and situation of this property has been fully explained, but it is surprising to us that no mention has been made in the prospectus of the blende lode, which runs through the grant for its whole length. The ores from this lode are not only very rich for that mineral but also contain much silver. The lead lode, too, on its western boundary a cross-course is a feature of much importance. We believe a spirited and judicious development is only needed to make this a great and lasting prize to its shareholders, and also of much benefit to the town of Callington, contributing another item to our home industries, and, consequently, national wealth.

Bedford-street, Plymouth, Dec. 10. THOS. VOSPER.

CORNISH MINE DIALING AGAIN.

SIR,—Is it not a matter of self-congratulation that the writing of the letters which you kindly published in the Journal on the employment of the land surveyor in the dialing of Cornish mines does not appear to have been labour altogether in vain: they would seem to have partially awakened the Cornish intellect; for I observe by last week's Journal that Capt. Abraham James, of South Wheal Frances, has thrown down the gauntlet to Mr. Henderson on the question of boundary between South Frances and West Basset. Whether Capt. James is justified in his challenge or not—*i.e.*, whether or not he be correct in his dialing—he, doubtless, has taken a step in the right direction; has taken up the cudgels and set an example which it is to be hoped will be followed by his co-managers, so as to put an end to the absurd, contemptible, and degrading practice of employing a land surveyor to do the work which they should do themselves, and for which their masters have to pay.—*Dec.* 10. I. L.

THE GREAT DISCOVERY OF TIN IN ROCHE.

The vivid imagination with which some people are gifted, and the power of new born literary genius as exemplified in our old friend Capt. David Cock, may be gathered from the following:—

A few day's ago two or three practical men who "know tin" hearing of this wonderful discovery made up their minds to go and see it for themselves. On arriving at the scene of operations they carefully examined the pile of rich tinstuff that had been taken out, and also had an average sample broken from the lode. Somewhat to their astonishment the stuff seemed to be very poor, but knowing that appearances are sometimes deceitful they set about vanning the best sample they could find, and after most careful treatment they succeeded in showing a fine edge of tin on the shovel—so fine, in fact, that they could hardly see it. Having shown the wonderful result of their test to the admiring bystanders, they retired more fully satisfied than ever of the extraordinary powers of their great man and his literary friends—a power which I see by Saturday's Journal magnifies poor tinstuff producing from 2 to 3 lbs. to the tou into a very rich "leviathan" lode containing 160 to 200 lbs. of tin to the ton.

Depend upon it, Sir, there is nothing like literary ability. If you have not got that, a poor lode is always a poor lode; but with it, *presto!* the thing is changed in a minute, and the richness of a Dolcoath is nothing to it. There is tin in Roche, and plenty of it, I believe, if it is carefully sought for and developed, but if there is no way of getting capital into the district but by "cramming" at this rate, I say better let it stop out. We had a similar experience a little while ago when the "mountain of felspar" was discovered, and I dare say those who spent their money there "could a tale unfold." Where are now the millions of tons of felspar which were "already discovered?" Echo and the adventurers answer—Where?

ONE WHO KNOWS.

PRACTICAL MINING—SHAFTS.

SIR,—There is a question connected with practical mining from the full discussion of which in the *Mining Journal* I believe all engaged in the mining industry would largely benefit—I allude to the question of sinking shafts. It may be stated generally that mine shafts are of two kinds—perpendicular and on the course of the lodes, each of which has advantages and disadvantages, both of which are probably exaggerated according as the writer or speaker is in favour of the one or the other system. The perpendicular shaft has the undoubted advantage that a maximum depth is attained with the smallest number of fathoms sinking—the straight line between two given points, as all mathematicians know, being the shortest. In sinking on the lode there is the advantage that the ground removed assists to pay the cost of removal, which, when the funds at disposal are limited, is often important, but it has the disadvantage that it necessitates complicated arrangements of V pieces or bell-crank levers to change the direction of the power applied, and that the mixed-angle shafts are constantly a source of inconvenience is obvious from the frequency we hear of straightening of the shafts being necessary, notwithstanding the fact that many shafts remain indefinitely in use owing to the costliness of the change.

Now, it appears to me that at the present time mining on the small scale is no longer practicable if fair profits are to be earned. Moreover, we must open the largest possible area of ground with the fewest possible shafts, and we must work those shafts with the smallest possible quantity of engine power. How to attain these objects is the problem I set myself to solve, and after long considera tion I believe I am in a position to suggest a general system which will prove at once effectual and economic. If such men as Captain William Teague, Captain John Lean, and the various other correspondents of the *Mining Journal* who advocate progressive mining would freely express their views on the matter I am convinced that much good would result. The proposition which I have to make is a startling one, and I am quite prepared to be attacked and laughed at, as I was when after the Hartley accident I suggested in the *Mining Journal* that where a colliery was too small to bear the cost of a second shaft a second outlet could be secured by opening a communication with the adjoining mine, a short Act of Parliament being passed to override any clauses in leases which prevented it. The suggestion was condemned by mere "practical men" as absurd, but the Act was passed, and the suggestion has since been largely adopted. I could refer also to other suggestions of mine which have been similarly laughed at and adopted, but this one will suffice, especially as my sole object is to benefit mines and mining, and not myself to realise any pecuniary benefit from the suggestion, which for the sake of distinction we will call the "Yankee system" of shaft sinking.

My suggestion will be best understood by taking a supposed case. We will assume that the general dip of the lodes is 50° to the east, and that there are half-a-dozen parallel lodes 20 fms. apart (the figures are merely imaginary to facilitate explanation). We will call the lodes A, B, C, D, E, and F. Now, the place selected for the shafts will be between C and D. The two main shafts (G and H) will be commenced 5 fms. apart; the first will be inclined 70° north-west and the second 70° south-east, and three supplementary air-shafts (I, K, and L) will be commenced and sunk perpendicular, I at 5 fms. from G and from H, K near the north-east boundary, and L near the south-west boundary. If funds were limited the shaft I alone could be sunk as a commencement, and then the shaft G, which would speedily get the lodes A, B, and C within reach for working, the shafts H, K, and L being made as the works extended. The effect of this would be that during the early working of the mine three shafts would be commanded from one engine without flat-rods or other power-wasting contrivances, and with a given amount of work—that is, a given amount of fathoms of ground removed—more lodes would be placed within reach than by the usual systems. It might also be added that with five shafts of equal length in the aggregate more ground could be thoroughly prospected.

But the amount of ground prospected is not the sole advantage of this Yankee system. There are many advantages in pumping and in winding through a straight diagonal shaft which are frequently overlooked. An instance of the comparatively small amount of power required to wind in such a shaft can be seen in some of the straight diagonal shafts at Botallack. The reason of this saving of power is

that as the lode rests on the side of the shaft a certain proportion of the weight to be raised is borne by the tramway, so that a much less strain is thrown upon the winding rope, which may be much lighter than would be necessary in winding from a perpendicular shaft from the same level. The pump-rods, again, could be arranged on rollers, so that whether the column of water or the plunger is to be lifted the consumption or power would be much less. With straight diagonal shafts, again, the miners could at all times be lowered and raised in the skips, so that their full time and energy for underground work would be secured, and their lives would be much prolonged. But these are all matters which would become developed in practice. Let the Yankee system be discussed and introduced, and all would be benefited.—*Truro, Dec.* 6. ENGINEER.

MINING AND SWINDLING.

SIR,—Under the most happy circumstances and under the best management metallic mining is essentially speculative in the cases of individual mines. Taking, however, best districts as a whole, the result will show very large balances of profit; for brilliant mining successes can find no parallel in their ratio of profit in any other industrial pursuit. It is impossible to imagine even any other case where, as in the instance of Devon Consols, the investment of 1000*l.* gave immediate and long-continued profits at the rate of from 50,000*l.* to 60,000*l.* a year. A business where results like these, although not common are yet possible, can afford to meet with heavy losses, and yet show a large balance of profit; and this is the case with respectable and judiciously managed metallic mining. Of course, in a speculative pursuit like this, which appeals to those gambling propensities that seem to be deeply engrafted in human nature, there is a class of mining conducted in a reckless and gambling spirit, whose result almost without exception is one of unredeemed failure. Metallic mining as a whole, however, can no more be fairly held responsible for the disasters which necessarily follow this class of mining than banking can be held responsible for the losses incurred in such cases as Strahan, Paul, and Co. or the Royal British Bank. The public opinion of the metallic mining districts utterly disavow this class of mining which is supported by—and, indeed, owes its existence to—the unreasoning credulity and cupidity of London or "outside" speculators. Metallic mining being thus necessarily speculative in the case of individual mines, of course those who adventure in them must be prepared—that is, if they are reasonable men—to incur losses even where they hoped for the greatest success. We see in prospectuses and in the advertisements or circulars of brokers statements that such and such concerns are certainties—beyond the range of mining contingencies; but this the most credulous must see to be a mere impudent misstatement—a highly seasoned bait to catch the lowest and least intelligent among those who speculate even in "outside" mines. What the chances or prospects may be in the case of each mining adventure must consequently be a matter of opinion upon which even those who are most competent to judge may frequently be expected to differ.

Among the leading miners of our principal districts, however, there are certain doctrines accepted—as resulting from the experience of ages—which, although they are incapable of scientific definition, are yet of daily application, and which reduce mining speculation within certain recognised limits of certainty. As a well-known mining captain forcibly remarked—"If I do not know where ore is I at least approximately know where it is not, though I may not be able to say there is a rich mine in such and such a place, I can in certain places say there is but little chance of one here."

Ordinary mining adventure is thus a matter of opinion within certain recognised limits, outside of which failure becomes a matter of course, and those who speculate in mines must be prepared to meet with losses in individual cases, although if they distribute their risk judiciously they ought, on the whole, to make large profits. In a matter where mere opinion enters so largely, and where the limits within success is possible are so incapable of definition, it is natural that unprincipled persons should seize upon it as offering the widest and safest field in which to appeal to the ignorance and cupidity of small speculators. There are a large number of mines concocted every year, the object of the promoters of which—like Sam Slick's nutmegs—is to "sell"; the mining a merely nominal matter, just sufficient to give the concern a legal existence. With such things and their victims experience has shown it is useless to meddle; they always have existed and always will exist, but have as little connection with mining as Col. Sleigh's bank in the Haymarket had with the Bank of England.

But, Sir, allow me to refer to the action of the London Share Market on mines which are in every respect fair and legitimate speculations, and sometimes even splendid successes, but which from the peculiar manner they are manipulated have been made a source of heavy loss and grievous injury to mining enterprise. The evil of which I complain is of comparatively recent growth, as is, indeed, the Mine Share Market itself—so much so that its action is as yet scarcely realised. Still this action is abundantly simple. Instead of acting simply as brokers, and recommending their clients to invest in what they consider most advisable in the whole range of mining adventure, it has now become the regular practice for the brokers to combine in certain cliques for the purpose of working up to fabulous prices two or three certain mines at a time in which they—by themselves or friends—have secured a sufficiently preponderating influence to make it worth their while to do so. They endeavour to divert all the capital flowing into mining for a certain time into two or three channels; and if they only very partially succeed the result is that the favourite mines of the hour are worked up to enormous prices. A little consideration will show how sound their calculation is. If we take any one or two mines it is evident that even one half of them is but a trifle if the smallest modicum of the great floating wealth of England is diverted towards them—if only one person in each of our large towns were induced to buy shares—an enormous enhancement of price must follow. As far as the brokers are concerned, it may be admitted that this system, for the time at least, is a monstrously successful one, and, as a matter of fact, large sums of money have been made by it. In the interest of the public, however, who wish to invest in mines—still more in the interest of mining, and even, I believe, in the ultimate interest of the brokers themselves—the policy is a fatal one, and consequently I have no hesitation, as far as I am concerned, in entering against it my most energetic protest, although in doing so I may bring down upon my head the opposition and abuse of those interested in maintaining the present system.

A "sensation" mine—which is the most characteristic epithet I can find to describe concerns promoted to this class—is generally selected with a certain amount of judgment, and is usually in itself a very good speculation or a prosperous success. There is rarely any objection to it in itself, and consequently there is no difficulty in obtaining favourable reports of it from the most respectable agents. The purpose is not to sell a worthless thing for a considerable sum of money—that is, left to mere outsiders; the object is to sell a thing which really possesses merits, and has a certain definite value for two or three times that value—which is a much safer and more plausible policy, but one which results in almost as much loss to the buyer. "Sensation" mines are of all classes—from the newly granted sett on which the sod is scarcely turned, to some good dividend-paying mines; in the latter case, as in the former, the object being to create by every known means of puffing and exhaltation such an excitement as shall work up the shares to double their intrinsic value. Scores of mines of these and every intermediate class have in their turn occupied the conspicuous but scarcely enviable favour of the brokers, and have been consequently worked to prices which neither their prospects nor their profits ever justified. It is a remarkable fact, but one nevertheless true, that since the prices of mines have been regulated by the operations of brokers, there has been more money lost by the public in dividend mines in the best districts in Cornwall than by the mining failures in those same districts. Wheal Buller, the greatest copper discovery in Cornwall during the present generation, was productive of more loss to those who bought the shares at the high prices to which they were worked than any mining failure in the same locality.

If there have been "sensation" mines in West Cornwall—which has certainly been the case—it has undoubtedly been on a very small scale compared with the Eastern districts. To Tavistock I believe is due the honour of inaugurating the system which certainly flourished there in its vigorous youthfulness with a life and energy which was not approached until the exaltation of the Caradon district. In this latter district South Caradon has been a splendid mine for years, but then South Caradon is a mine beyond and above brokers. The extraordinary fatuity which should have caused a mine situated in the primitive and unproductive granite to sell for double the price of a mine paying greater profits can only be accounted for by the boundless ignorance of mine speculators, blinded and dazed by "sensation" puffing. The only thing I can compare it to would be buying Turkish Consolidated at 170, with Consols at 97.

I shall feel greatly obliged to you, Sir, if you will give this letter space in the *Mining Journal*, for I think the perusal of it may prove useful to some people, particularly now, just after the rise in the price of tin. BOSKY JACKO.

SOUTH FRANCES MINE.

SIR,—I have read with much interest the various remarks on this property, and have been to a great expense and trouble to ascertain the real position of the concern, and have gathered the following facts respecting it:—It is stated by the manager that an outlay must be made, sooner or later, to keep the mine in a permanently prosperous position. The rich reserves in one part of the mine are almost exhausted, and there the eyes of the mine have been practically dug out to assist to pay the increased dividends which have been made. Pascoe's shaft is admitted by all who know it be discreditable to the county, and being the only communication to the workings the mine is hot and not well ventilated. The agents have long expressed a wish to cut down this shaft and put it in a better working condition, and had it not been for the violent rise in the price of tin this would have been under weigh ere this. Now, may I ask what the cutting down of this shaft means? According to the best judges whom I have consulted it means a heavy drag upon the returns for at least 15 months, and an outlay of 2500*l.* Then a new pumping-engine must be provided, with about 250 fathoms of heavy pitwork, and a new double skip-road put in from top to bottom, or 500 fathoms of skip-road, to bring the mine into a thoroughly efficient condition. In order to make the ventilation thoroughly satisfactory Marriott's engine-shaft must be repaired from top to bottom, and sunk 50 fms. deeper, so as to effect a communication with the workings at Pascoe's shaft.

Then as to the pumping-engine on Marriott's shaft, it is, practically speaking, worn out, and consequently consuming too large a quantity of fuel, so that a new engine there would economise its own cost in a very short time. Then there is the old whim-engine on this shaft, and the stamping-engine in a very similar plight. The next thing is another new engine proposed to be erected on the new shaft sinking on West Frances boundary for winding and pumping there; and considering that this shaft is to be sunk speedily by a boring machine, and that it is being sunk for the express purpose of exploring the lode below West Frances, and will to some extent drain that mine, it is perhaps a question whether this engine will pump the shaft dry, and wind the stuff, and even if it could it would, I think, be far more economical to erect a distinct pumping-engine, which would quickly economise its own cost in fuel. Then to deal with the low grade tin ore which this mine has now in reserve, and work it economically, a new dressing-floor is necessary, the 48-head stamp being scarcely adequate to cope with anything but the high grade—in fact, they want fully 100 heads of stamps.

Now, let us put these items together:—Cutting down Pascoe's shaft, 2500*l.*; new pumping-engine on this shaft, 2500*l.*; new pitwork 13 in. on same, 1500*l.*; 500 fms. of new skip-road on same, 600*l.*; repairing Marriott's shaft, 250*l.*; sinking 50 fms. at 40*l.*, 2000*l.*; 50 fms. new pitwork, 300*l.*; new pumping-engine on this shaft, 2000*l.*; new whim on the same, 1000*l.*; new stamping-engine, 1000*l.*; new dressing-floors, 2000*l.*; new whim on new shaft, 1000*l.*; new pumping-engine on same, 2000*l.*: total, 18,650*l.*

I have shown that this expenditure ought to be made within about 2½ years, which would require (say) 940*l.* to be set aside at each of the eight 16-weeks' meetings that would be held during that period; and reckoning the profits to remain at 3964*l.* in each 16 weeks (though I admit the probability that the expenditure I recommend will increase them) there would remain but 3025*l.*, or a 13s. 4d. dividend instead of 3375*l.*, or a 15s. dividend, as declared at the last meeting, therefore 13s. 4d. should not have been exceeded.

Having ascertained this to be the actual position of the concern, I cannot understand how this has not been made more distinctly known to the shareholders, and a far larger reserve found than the 2914*l.* carried forward made to meet this instead of an increased dividend being paid. I shall be sorry indeed if any legitimate investors have been misled by the manœuvering of interested dealers. Investors have become cautious enough now not to be so easily deceived. As to the water being in the bottom of the mine, it is only surprising how with their present inadequate pumping gear they can keep it so well. The rods are passed from Marriott's shaft through the level about 100 fathoms below the surface, and the level being crooked the rod works at a disadvantage, and is frequently breaking. No doubt it will appear rather extravagant to put up so many new pumping-engines to meet the requirements of this mine, but if we consider all the circumstances of the case I think my estimate will be found exceedingly moderate. I should also mention that in it I have not allowed anything for new pitwork in the new shaft, sinking the same, and providing new skip-road and boring machinery, which will cost altogether perhaps 6000*l.* to 8000*l.*, making a total of about 25,000*l.*—*Truro, Dec.* 9. A PRACTICAL INVESTOR.

SOUTH FRANCES MINE.

SIR,—In my letter to you last week, I referred your readers to the agents' report presented to the meeting on the 2nd inst. for a refutation of the remarks made by "Carn Brea." I did this because I thought you would have published the agents' report with the statement of accounts. These both being official documents should be reliable, therefore of the greatest importance to the shareholders and the public, all other remarks that passed at the meeting having been made to fit party purposes only. Finding you did not publish the agents' report in last week's Journal I conclude it was not sent you; and, as I know you are always anxious to give your readers the fullest mining information you can gather, I send you the following copy of the agents' report:—

"We beg to inform you that Pascoe's shaft is sunk 5 ft. below the 215, and is being sunk by nine men, at 25*l.* per fathom; the lode is worth 30*l.* per fathom for 12 ft. long. The 215 west is being driven by six men, at 9*l.* 10s. per fathom; the lode for 6 ft. wide is worth 30*l.* per fathom. Six men are employed in rising above this level at 5*l.* 10s. per fathom, where the lode is worth 25*l.* per fathom. The 215 east is worth 10*l.* per fathom. We have opened at this level about 17 fms. on the course of the lode, and we are pleased to say it is, so far, the best level we have ever seen in the mine. A winze in the bottom of the 205 is being sunk by six men, at 10*l.* per fathom, on the north part of the lode, which is worth 8*l.* per fathom. We believe the south part when cut into will be found very much better. The 205 east of shaft is worth 8*l.* per fathom; the same level west is worth 6*l.* per fathom; 18 men are employed in stoping above this level at 4*l.* 5s. per fathom, where the lode is worth on an average 20*l.* per fathom. The 185 is being driven west by six men, at 9*l.* per fathom; the lode is very wide, producing stones of tin ore, but not rich enough to value. This level is being forced on with all possible speed, with a view to cutting a fresh run of rich tin ground in this direction. The 185 east is worth 10*l.* per fathom. Above this level we have 35 men and 20 boys employed in stoping at about 5*l.* per fathom, where the lode is worth on an average 20*l.* per fathom. At the 175 and 155 we have twelve men and three boys employed in rising and driving on the cross-course for ventilation, and we hope within a fortnight from this date to effect a communication which will completely ventilate this part of the mine, and enable us to drive and and stope the ground much faster and cheaper. The new engine-shaft in the western part of the mine is sunk 6 fms. below surface, or about 6 ft. below the shallow adit; the latter 6 ft. is full of water, and the sinking of the shaft is suspended until a horse-whim is erected, which we shall now proceed about at once, and shall then resume the sinking of the shaft below the adit. For the further prosecution of this part of the mine it will be necessary to erect a 28-in. cylinder winding-engine, which will be quite ample for both pumping and drawing. The supply of water is about equal to a 6-in. lift, which at the 70 and deeper levels will run back to our present engine and be pumped up in the ordinary way, with little or no difficulty. By so doing no separate pumping-engine will be required for many years to come, if, indeed, for ever, as the levels can be brought under this shaft from Pascoe's shaft by boring machinery, as quickly as the new shaft can be sunk. We still believe this part of the mine to be quite equal, if not superior (prospectively), to any other part of the mine, and we advise a vigorous prosecution of it. The new drawing-engine at Pascoe's shaft is now all but complete; it works admirably, and is capable of drawing through a good shaft and reasonable quantity of stuff. The labour cost and merchants' bills charged to-day are together about 500*l.* above what they were at the last account; this arises from the extra hands employed at surface, and also extra castings for the new engine. During the last 16 weeks we have sold about the same quantity of tin ore as we sold for the previous account, and notwithstanding the extra cost mentioned above, the great rise in the price of tin ore (equal to 11*l.* 6s. per ton) has enabled us to show a much larger profit. Since the last meeting no special improvement has been met with in the upper levels; they continue to produce low quality tinstuff. But we are pleased to say the bottom level is the best we have yet opened on this lode, and we see no reason why it may not continue to any reasonable depth.—A. T. JAMES and JOHN OPIE."

I should think this report, with a 15s. per share dividend and a balance of nearly 3000*l.* carried over in favour of the company, would be enough to show any unprejudiced person how much reliance can be placed on the statements of "Carn Brea" without any further remark. By inserting this in this week's Journal you will much oblige— C. W. SECCOMBE.

Tavistock, Dec. 10.

SOUTH FRANCES.

SIR,—I regret to see the persistent efforts which are being made to depreciate the value of this mine by parties who can be actuated by none other than the most mercenary motives, or from a spirit of revenge, and as we must all acknowledge that such a course does more injury to legitimate mining interests than all other causes combined I feel it is the duty of every right thinking man to protest against such practices, and to expose the glaring falsehoods attempted to be foisted upon the public as truths. I am surprised to see such prominence given by the Messrs. Watson Brothers in last week's Journal to a report on South Frances, made by one who is termed a "well-known practical agent." I think it needs but the slightest knowledge of mining to see that the report is utterly false, and, moreover, is self-condemnatory. The agent says that the "rich stopes will soon be cut off by a downright lode near the West Basset boundary." I will not ask what the agent means by a "downright lode"—which reads like downright nonsense—but will suppose he means a perpendicular lode. Assuming that such a lode—or, as the agent a line or two below calls it, a "heave"—does exist (which is denied by parties in the district), how in the name of common sense would it disadvantage South Frances to have such a great natural boundary? Such a boundary does away at once with the bugbear of encroachment on West Basset which has been so sedulously spread abroad. The agent next states that—"If it be worth while to pursue the lode beyond the heave it will take a year and a half to open ou stopes." Now, surely every one who knows Captain James will give him credit for having better sense and more honesty than to waste his employers' money and a year and a half of valuable time in opening up stopes in another company's ground. Then follows the agent's general condemnation of the mine, and everything and everybody connected or associated with it, even to the Government Inspector of Mines; nay, more—he even condemns the dividends paid to the shareholders, and would like to all appearance to blot the whole concern out of existence. My only wonder is that such gentlemen as the Messrs. Watson should have felt themselves called upon to publish statements so utterly at variance with truth, reason, and common sense, especially as this agent's statements are said to have been made about two months ago, thus leaving ample time for ascertaining the truth on the subject. It is by such unscrupulous tactics as these that an attempt is being made to depreciate the value of one of the best mines in Cornwall—a mine which during this year of depression that has proved so disastrous to mining as almost to destroy this industry has paid to its shareholders over 8437*l.*—or 1*l.* 17s. 6d. per share—in dividends, leaving a surplus of nearly 3000*l.* in the company's hands, thus showing a profit of nearly 12,000*l.* for the present year, during which time tin has sold as low as 31*l.* per ton. With tin at present prices the company can pay 45s. per share for 1880, and have ample funds for making any and all improvements required or necessary for developing the property—a showing unequalled in Devon or Cornwall—and I see no reason why these shares during the next four months should not advance from 50 to 100 per cent. above present prices. This will appear more plainly if we compare South Frances with a little mine in this neighbourhood—Wheal Crebor, both having at present about the same market value. In the former mine they have four good steam-engines (one newly erected), a powerful stamps, and well laid out dressing-floors and machinery. In the latter mine they have two water-wheels, and an antiquated crusher of extremely limited capacity, a dressing-floors of only a few yards in extent, and the dressing is being conducted on the same principle as fifty years ago. In the former mine they are sinking their engine-shaft in a lode worth 30*l.* per fathom, and the bottom levels are driven through ground of the same value for 20 fathoms in length, and continue equally good. In the latter mine they are not sinking their engine-shaft, and if they were to sink it they must do so in unproductive ground, and drive 250 fathoms to get under their present bunch of ore; nor can they get the new shaft down to their bottom level (or where they have their ore) in less than a year and a half to two years. The former mine has for years been a dividend-paying mine; the latter for years a call-making mine. The former has paid double as much in dividends during the year as the total product of the latter during the same time; nay, more—the former has a larger balance in hand for the last four months after paying 20 per cent. profits than the latter has for the whole year, calls included. But to continue would be a waste of time. Wheal Crebor is a nice little mine, and will I hope pay dividends some day, but it certainly bears no comparison whatever to South Frances as an investment. I, therefore, strongly advise intending investors to visit South Frances, or send a responsible man to inspect the mine for them, when they will find the statements I have made quite correct, and will know what value to put on anonymous statements purposely made to deceive the unwary.

Horrabridge, Devon, Dec. 10. THOMAS TREMARTH.

THE GREAT LODES OF THE D'ERESBY MOUNTAIN.

SIR,—Messrs. Watson, in last week's Journal, speak of the champion lode of the district, but it more resembles a belt or channel of highly mineralised ground containing two or three powerful north and south lodes, intercepting the east and west and caunter lodes, and thereby forming a succession of ramifications, junctions, and intersections, such as are usually found in most great mineral producing centres. Like the lodes of the neighbouring mines, they have as yet only been scratched over, but they have undoubtedly been found continuously productive for a greater length from north to south than any yet operated on in the district, and that they will be found very remunerative when greater depth is attained below the blende is a fair assumption, and that assumption is much strengthened—indeed, I may say clearly demonstrated—by the extension of the levels in the Griffin Mine to the south on the same lodes, which from its position (the general dip of the strata being north north-east) is some 1200 ft. to 1500 ft. lower in the formation of the district than at D'Eresby Mountain, and consequently the pioneer mine in depth. Here the lodes are for many fathoms in quartzite, closely resembling a portion of the Stiperstone range, which forms a chief feature in the great lead producing formation of Shropshire, while southward appears a very congenial clay-slate, which should produce rich mines for lead to great depths, although it does not accord with the tradition of the district to the effect that—"Nature had placed the greater part of her mineral wealth near the mountain top, so that the favoured natives might get a plumb with the rabbits."

The Griffin Mine was found in cutting the railway, and a considerable quantity of lead got from a fissure lode in the upper part of the quartzite, but which appears to have been left on account of the tradition—"That the lead did not hold down." They are said to have realised 2000*l.* profit from their workings in the quartzite, and to have afterwards spent it in exploring an ancient rabbit warren, where tradition and the oldest John Jones said the mine ought to be. The Griffin adit level was taken up a few feet above the River Conway, and has been extended northward under the mountain upwards of 80 fms. in a large and productive lode. The past 15 fms. has taken us beyond the quartzite into blue rock, where the lode is also very large, very productive for lead ore, and free from blende and sulphur, and appears to be further improving as we advance, which speaks very much in favour of the Aberllyn and D'Eresby Mountain mines when they get deep enough to be below the blende. In the 10 fm. level below the base of the mountain and deeper than the River Conway we are driving north in one of the finest gossan lodes the kingdom can produce, worth from 2 to 3 tons

of lead ore per fathom, free from blende or sulphur, and having all the appearance of being the top of the great course of ore. In the 15 we have not yet reached the main lode, but we have a branch lode from it, composed of carbonate of lime, gossan, and clay, and worth 1 ton of lead per fathom, which speaks well for the main lode when we intersect it; also for the mines in the mountain, as it demonstrates that the lodes are productive to a greater depth than they can reach for the next generation, and fully warrants their assumption that the deeper they go the more productive for lead ore their lodes will become, and this remark is applicable to all the mines of the district—they want deeper mining. CHAS. KNEEBONE.

Bettws-y-Coed, Dec. 10.

INDISCREET MEDDLING—OFFICIOUS INTERFERENCE.

SIR,—The guerdon which, it has been said, is offered to the man who minds his own business is not likely to be won by your correspondent "Carn Brea," who seems to have exhausted his eloquence in endeavouring to depreciate the merits of South Wheal Frances. He tells you that they have all but, if not altogether, crossed the boundary line separating them from West Basset—that their tin ground is all but exhausted—that the winter floods will drown the mine—that immediate heavy outlays cannot be avoided—that necessity presses for alterations and repairs, new engines, new machinery, new dressing floors, and I do not know what more—amongst the whole he might as well have added a new *mine* too—that dividends must of necessity cease, and so on: but if the tin ground be exhausted why he wants a new dressing floor has yet to be explained. But why does "Carn Brea," under this occult *nom de plume*, wickedly and wantonly try to injure his neighbours? Why recklessly endeavour to detract from the value of their property? Supposing, however, that all he has said of the mine be true, what does it concern him? Why meddle at all with other men's matters; with things in which one has no personal interest? This is evidently the case with your correspondent; were it not so he would not have concealed his name. All he has said must have proceeded from sheer malice, from a corrupt feeling; or if he has any interest at all in the matter it can be no other than that of endeavouring, with an *ignis fatuus*, to frighten the shareholders in the mine to induce them to let go their shares so that he may profit by their folly: folly, I say, if there be any truth in the report of the manager to the shareholders. The effusion of "Carn Brea," whether the manager's report be true or not, is in direct contravention, and too clearly appears to be the offspring of malignity. I have no personal interest in South Wheal Frances, neither have I ever had any acquaintance or dealings with its manager, and do not by any means envy the spirit and disposition of the man who detracts both from it and him.—*Dec.* 10. JOHN LEAN.

ROCK'S MINE, ROCHE.

SIR,—The Journal of last week announced to its readers a valuable discovery of tin in Rock's Mine—now called Imperial Goonbarrow. This is a source of satisfaction to me on several grounds. It will be the means of a further development of that mine, and, perhaps, of the district. Such discoveries stimulate enterprise and effort in the direction of mining. I am glad that Capt. D. Cock has been so successful in operating in this sett, which is also a clay-slate sett of a good character. A friend who lives in Roche informs me, by letter received this morning, that the miners have cut into the lode 18 ft. and have not reached the other side of it. As I am going into the district in a few days I will take the opportunity of seeing the mine, and thereupon I will send you a correct and full account of it, that your roaders may know the whole truth concerning it. The Beam Mine in the same locality was rich about 30 years ago. R. SYMONS.

Truro, Dec. 11.

MINES IN BREAGE.

SIR,—Being at Breage to-day I took the opportunity of taking notes of all the mines in the parish, nearly all of which are now idle. The most considerable mine in the parish, as you know, is the Great Wheal Vor, which has been worked by several successive companies, the last of which ceased in the year 1860; they commenced in 1852. The preceding company ceased operations in 1844, after working about 35 years, with a profit of 272,000*l.* The mine was at work in the year 1748, but how long before and after that date by the then existing company there are no records to show. The depth from surface is 330 fathoms. The last company did very little at the bottom of the mine; they did not sink an inch. At the 265 fm. level there is a lode that will yield more than 1 ton of tin per fathom. Great Wheal Vor United embraced the old Wheal Vor, Wheal Vreah, Carleen, Polladras, Penhale, Wheal Metal, and Wheal Lithney, which together covered an area of about 1400 acres. Although this mine is very deep there are some portions of the ground well deserving of a further prosecution—for instance, Polladras Downs, which would, doubtless, pay well at the present price of tin. Trueman's lode in Wheal Vor, which in depth is in Polladras, yielded a profit of 2000*l.* during the last working, and this lode should be pursued to a greater depth. Indeed, I have heard that a lease of a part near Wheal Vreah has been granted to Mr. C. M. Thomas. This lode is identical with the lode in Carleen, which is now being worked under the name of West Vor by a company formed by Mr. W. Argall, of Breage, who is the local purser. The secretary is Mr. Hunter, of London. Capt. Harris, late manager of Great Wheal Vor, is the manager. The prospects here are very good; the operations are in virgin ground.

Polrose was formerly in Wheal Vor sett, but is now, or was, worked by another company, who, it is reported, intend to resume the works. All the plant is *in situ*, and the returns would perhaps pay with tin at the present price. The depth is about 60 fms. Mr. Roach, of Trew village, is the purser and manager.

Great Work has been a very profitable mine under two companies. It is now in the hands of Capt. William Teague, who intends, it is said, to reopen the mines, the pumping and stamping engine being in readiness for work. The depth is about 200 fms.

Godolphin Mine was commenced about the year 1800, by Messrs. Williams, of Scorrier, who in a few years gained about 90,000*l.* by the working. Another company, formed by Capt. Joseph Lyle and Co., about the year 1845, lost about 150,000*l.* by a further exploration. Of course, this does not deserve any further attention.

Great Wheal Fortune was worked in 1827 by Messrs. James Michell and Co., of Gwennap, at a great loss. Resumed about the year 1850. At one time it gave good dividends, but there was a loss upon the whole. There are at present some operations on branches by a local company. There is a steam-engine on the mine, but, owing to the low price of tin, the stamping is being done by water-power on tin raised above the adit level.

South Wheal Fortune is a copper mine. It has been idle about thirty years. The depth is about 60 fathoms, and it returned in three years between 5000*l.* and 6000*l.* worth of copper. It was stopped in consequence of the badness of the engine. They (the workers) ran off from an apprehension that the boiler would explode. This mine is well worthy of another trial. Near the lode they worked on there is one never touched.

North Wheal Metal, east of Great Wheal Vor, and having some of its lodes—particularly the main lode and Trueman's lode—is deserving of further prosecution. The depth under the adit is only about 25 fms. There is a rotary engine now standing ready to work.

Wheal Wallis, north of North Wheal Metal, is about 30 fms. deep to adit. Little done below. This is in the manor of Pengwedna, on Penhale lodes. Worthy of attention.

Penhale Mine was worked by a London company for about fifteen years—losing all the time. Returns very small. Machinery partly removed. It is reported that Capt. Martin intends to rework it. Poor encouragement.

West Godolphin, on Godolphin Hill, is now idle. Machinery removed. The loss was heavy.

West Great Work also idle. Machinery sold. Loss considerable.

The Great Western Mines are partly in Breage. Not worked to a great depth. There are points well spoken of. All idle.

Leeds and St. Aubyn Mines, always poor, and promising. Captain Curtis was manager. Mine idle.

Sidney Godolphin was set to work by the late Capt. Joseph Vivian and Co. An engine was erected, and all appliances for permanent operations, but in about three or four years it went down with a loss. This mine deserves further attention.

Sidney Cove, near Prah Sand, is a copper mine, about 30 fathoms deep. It was stopped many years ago because of the loss of the lift, which is said to be in the shaft at present. It is a fact that for every fathom of ground which was sunk, driven, cross-cut, and stoped ½ ton of copper was returned.

Trewavas is a copper mine which ceased to work about 25 or 30 years ago. It yielded some profit I understand, and worked for several years. As the sea has found ingress into the workings resumption of operations must be difficult, if ever attempted. A piece of ground at the west, in same sett, is considered a fit site for operations.

New Hendra adit was worked by two successive companies. Operations ceased about twelve months ago. Here is a piece of ground worthy of being proved by a boring machine, as several lodes would be intersected by a drift northwards.

Lesceave Copper Mine, near the cliff, is said by some to be deserving of further trial. There was an engine here 25 years ago.

Wheal Prosper, in Rinsey, long since idle. This is a tin mine, near the cliff.

Wheal Helen, worked by Capt. J. Vivian and Co., was left off poor. Only a small parcel of copper sold from it.

Trevena Mine (tin) was also worked very partially by Capt Vivian's party. It is in a farm of that name.

The above are all the mines deserving of mention in the parish. The chief sources of employment in the parish at the present time are found in the clayworks, fire-brick manufacture, and stone quarries. Tregoning Hill Clayworks yield dividends, Wheal Grey Clay and Brick Works are self-supporting, and Tresowas Clayworks are nearly self-supporting. The main stone quarry is in Rosemebar estate, and the others, slightly worked, are at Tregoning Hill and Pembro. Of all these works Mr. W. Argall is the manager and purser, who has been the chief employer of men during the recent lamentable depression. But for him all the best miners in the parish must have migrated or emigrated. Mr. Argall also employed as many as 40 men at a time in breaking up crofts, which he has converted into arable land.

I omitted to state above that Wheal Metal (worked in connection with Great Wheal Vor) yielded very large returns, and made a profit of 100,000*l.*—*Truro, Dec.* 8. R. SYMONS.

BIOGRAPHICAL SKETCHES OF MINING MEN.

SIR,—It has occurred to me, as a desirable addition to our Cornish biographies, to publish the lives and works of the most prominent of our mining men, past and present. I mentioned this to a friend of mine, near Helston, a few days ago, when he said that such notices had already appeared in the Journal. In that expression I think he erred, for I have taken in the Journal at least for 30 years and never saw anything of the kind, except as regards Captain Joe Odgers, and, perhaps, one or two besides.

I do not intend to undertake to publish the lives of all Cornish mine managers and mine promoters, for that would occupy too much of my time and of your space, but the chief of them, beginning with the following list:—Captains T. Parkyn, Roche; W. Teague, T. Richards, I. Richards, Consols (deceased); C. Thomas (deceased), J. Lyle (deceased), J. Vivian (deceased), F. Pryor (deceased), and T. Teague (deceased).—*Truro, Dec.* 11. R. SYMONS.

BWLCH UNITED MINES.

SIR,—I have read from time to time with much interest the letters from various correspondents regarding the above mines which have appeared in your valuable Journal, and my knowledge of the property prompts me to ask your kind insertion of this letter. The name Bwlch United may possibly not be intelligible to the general public, and consequently it might be as well to state that the company possess another mine on the same property called "Pwll-yr-Henaid," and on which a shaft has been sunk 72 fms., and various levels driven. The bottom of this shaft was left rich in ore, and has returned as much as 50 tons per month of the same high-class silver-lead as is now being taken out of Bwlch. There is no doubt but that in time this mine will be worked conjointly with Bwlch proper by the present company.

Your correspondent "Veritas," in his letter of last week regarding the Bwlch Mine, gives a lucid explanation as to the productiveness of the lodes at their junction in depth, which with the more powerful dressing machinery which the prolific nature of the mine in its energetic development by the present company has rendered necessary, and which is now in course of erection, may be relied on, and as regards the blende, which is also found to contain some silver, your correspondent would have been more accurate had he described the quantity as thousands of tons instead of hundreds. Let us hope that the three lodes which have rendered so good an account above may, like three tributaries, unite, as I am convinced they will below, and form a mighty stream, bearing wealth to the shareholders and employment and happiness to the humble miner. AGENT.

Rhayader, Dec. 8.

BWLCH UNITED MINES.

SIR,—I am a well-wisher to all industries which give employment to my fellow-men, and mining in this country is a great provider for the many. I must say that I have been impressed with the earnestness in the cause as exemplified by the able correspondents whose cognomens appear in your Journal, and it is refreshing to read their letters on the mines in Cardiganshire, as I have some acquaintance with various localities in that county. I was much struck with a letter from "Veritas," on the Bwlch United Mines, in the Supplement to last week's Journal, and if the writer is the gentleman I suspect I must say that, in my opinion, no one has the mining interest more at heart. The concluding lines of the said letter as to a permanent reserve fund do him credit, and speak well for his business capacity. It is to be hoped that he will receive the support that he deserves in his various enterprises Mining, like any other business, requires time and attention, as well as the money, to carry it to success. Prosperity, as a rule, follows in the footsteps of those who seek it, and mining rarely fails when the money is judiciously used in its development. No means are being left unemployed to make the Bwlch United Mines a lasting success. They are not only taking advantage of the vast expenditure incurred in opening the mine by the former workers, but also of the riches left on the surface. I say, therefore, to the Bwlch go on and prosper, you have the means and the energy to do so. This property must have an importance in its silver-lead producing capabilities, and as a good mine does credit to the community, they I have no doubt will see the wisdom of supporting such a legitimate undertaking. INVESTOR.

COPPER IN CARDIGANSHIRE AND MONTGOMERYSHIRE.

SIR,—I take a great interest in this matter, believing as I do that copper does exist in paying quantities in the killas of these counties—in fact, in the face of the recent discoveries at Esgair-Fraith it is impossible to deny it. I did not mean in my letter of a few weeks back to assert that the old Moelfadian Mine was actually on this lode; but merely that it was as likely to be on that (the Esgair-Fraith) lode as any other. As your correspondent says, old Moelfadian can fairly afford to stand on its own merits, having been a copper producing mine for upwards of a century, large quantities having been found both east and west of the "Moel" itself. In many places to the north of the Plynlimmon range large quantities of mundic are to be seen at surface. Surely, this must be taken as an indication of copper. In a level above the Llyn-Llyngan Rheidol a great mass of this metal (mundic) is to be seen (and smelt), and it is to be borne in mind that the stratum of ground in this immediate district is a species of grit evidently an older formation than the silurian formation—thus complying with the requirements of the most bigotted of the old Cornish captains. This stratification extends north of the Llyn to Drosgol, where we find a lode running between it and the silurian rocks, upwards of 100 ft. in width, filled with a red irony gossan, and Mr. Warington Smyth told me that "it was a most masterly lode, well worthy of a further trial in depth." It is only fair, however, to add that he said he could not give any opinion as to what such indications would lead to in depth. I may add that Mr. Smyth was, as Inspector to the Crown, well acquainted with that place. But I do not want to puff these or any places; but in all seriousness to fairly discuss this all-important subject—whether the finding of copper in such rich quantities as are actually being found in Esgair-Fraith is an anomaly and freak of Nature, or whether we may not expect to find that the whole district is more or less a copper-bearing one. Copper has been found almost due west of Esgair-Fraith, at Ynys-Hir, near Ystrad-Einon, also at Pwyll Romans, where I have myself seen a rich course of ore over 1 ft. wide; and I see a Mr. J. G. Williams, in a paper read by him before the Cambrian Archæological Society at Machynlleth, on Aug. 27, 1866, says, referring to Lodge Park—"It is well known that very rich copper ore is found in the hills above;" and, again, of Cwm Darren—"rich copper ore was found near the surface." I think, therefore, there are fair grounds for believing that rich copper measures do exist in North Cardiganshire and the adjoining part of Montgomeryshire; this, however, without at all touching the discussion as to whether these measures are to be found east of the Van Mine.—*Dec.* 9. CEREDIGION.

[For remainder of Original Correspondence see this day's Journal.]

Meetings of Public Companies.

GENERAL MINING ASSOCIATION.

A meeting of shareholders was held at the Cannon-street Hotel on Friday, Dec. 5,—Col. E. W. SCOVELL in the chair.

Mr. C. G. SWANN (secretary) read the notice calling the meeting.

The CHAIRMAN said he had really very little to communicate to the shareholders regarding the current operations for the season. Thus far the year which was now coming to a close had been an uneventful one as far as the company's operations were concerned; it had been a continual struggle against the depression of trade which had ruled so long, and against the keen competition and low prices which he had so frequently referred to before at these meetings; and if the flood of depression had reached its ebb, and the tide of prosperity was returning, he could only say that it had not yet reached the coal fields of Cape Breton, where the company's operations were exclusively carried on. They would scarcely be surprised to hear this when they looked round and saw what had been the state of the coal trade in this country and in the United States—particularly in the United States—which affected the price of the company's coals. For some time the coal trade in the United States had been regulated by the combination of the different companies who were also the owners of the coal fields in Pennsylvania; but the "ring," or combination, broke up last winter, and during this year up to autumn the companies had been competing with each other, and had been running coals into the market, and selling them at unprecedentedly low prices—at prices, indeed, which he should think were scarcely remunerative. In summer anthracite coal was selling at $2 40 c. per ton, and it went even lower still in autumn. Then, again, there had been this anomalous state of things—that whereas the trade in iron both in the United States and this country had revived, and was increasing, coal had actually been going down in the market. The low price of coal in the United States continued till the middle or end of September, when there was a rise, and coal was now selling at $3 40 c. and $3 50 c. per ton; and although the company would not derive any benefit from the advance this season, still if the rise continued, and the rebound proved to be permanent, it might lead to better prices for the company's coals, of which the shareholders would feel the benefit. The same anomalous state of things had prevailed in this country; there had been great activity in the iron trade, yet coal had not gone up in the same proportion. It had hitherto been supposed that the iron and coal trades worked side by side, and that the prosperity of one would establish the prosperity of the other; but he did not think coals had risen much (unless the early frost had induced the retailers to raise the price of household coals), because he was assured by his colleague, Mr. Hill, that at the pit's mouth the price was still exceptionally low. Therefore, the shareholders would not be surprised if in this company they had not made any great step towards an increase of price. However, notwithstanding the depression, they had at the Sydney Mine about kept pace with the previous year. The shipments were low owing to the long-continued depression of trade in the provinces, and people hesitated about laying in their stock of coals. It was not until autumn that the trade at all showed any life and activity. They were considerably behind at Sydney until lately, but recently the trade had been very brisk, and in the month of October they raised the greatest quantity, he supposed, of coal at Sydney that they had ever raised, and which was all sold—about 20,000 tons of coal, averaging upwards of 700 tons a day; and by advices recently received the directors had been informed that they had lately raised as much as 1000 tons of coal in one day from the Sydney Mine—that is, taking large and small together. The sales at the Sydney Mine at the date of last advices were 83,356 tons, against 86,028 tons; but as trade generally was more brisk it was to be hoped that if the season continued open they would make up their quantity. At the last meeting allusion was made by himself, and emphasised by his friend Mr. Jones, as to what effect the raising of the tariff and putting on duty in the Dominion would have upon the company. The directors did not hold out much encouragement with regard to the effect this step would have on the company's trade, and the expectations then held out had been realised. He did not think an additional ton of coal had been sold from Cape Breton, and only about 30,000 or 40,000 tons more Pictou, but that was not sufficient to compensate for the additional price in the way of working, materials, and stores. The duty on manufactured iron, which had been 17½ per cent., was now 25 per cent. With regard to the Lingan Mine, little or nothing had been done; they had sold from it a small quantity of coal, and the directors were keeping down expenses there, and raising the coal as cheaply as possible, but it was necessary to keep the mine open, for if they abandoned the mine they would also have to abandon a large area of coal which the company had to keep in working. The prices obtained there had been nominal—much about what they were last year; but this arose from the fact that the company were compelled to make certain allowances owing to the keen competition. They were doing some better trade in bunker coal; by the last advices there were 14 steam vessels which had coaled at the company's wharf in one month, chiefly for England. The great difficulty was with regard to the question of freight. No doubt the company could have sold more coal in Newfoundland, in New Brunswick, and perhaps in Montreal had it not been for the difficulty of freight. The moment the date of prosperity set in in the United States, the small vessels sought coasting cargoes However, he hoped the company would do better again, and would participate in the revived trade which was apparently setting in on the other side of the Atlantic, and which he hoped would be equally observable on this side also. It depended upon the last few weeks of the season whether the company made large or small returns, as during the idle part of the year the expenses were going out, and nothing coming in, and it took some time to overtake the loss thus occasioned. This year it had been particularly so from the smallness of the shipping. In the last report the directors stated that the arrangement sanctioned this time last year by the general meeting, for working the Spring Hill area conjointly with the Spring Hill Mining Company, was not concluded, but it was hoped that the arrangement would be carried out. He was now glad to say that this arrangement had been carried out to the fullest extent. The directors had received the first instalment of the purchase money according to agreement, and had received a bond for the payment of the remainder, and this company was registered as the holders of 8205 shares, the certificates of which were held in this country. The shareholders would remember that by that agreement this company was entitled to nominate two directors to represent it on the board of the Spring Hill Company—a very important arrangement, which the directors had carried out in a manner which, he thought, the shareholders of the General Mining Association would approve of. They had nominated, in the first place, Mr. Morrow, of the firm of Cunard and Morrow, who had been the agents of this company in the province. Mr. Morrow was intimately acquainted with the coal trade in the province and in commercial transactions generally; he had always shown great zeal in the discharge of his duties, and had shown that he had at heart the interests of this company. The directors had the greatest confidence in the integrity, zeal, and knowledge of the coal trade possessed by Mr. Morrow. The directors had nominated as his colleague Mr. Swann, the secretary, who possessed the entire confidence of the board. During the seven years Mr. Swann had discharged the duties of secretary he had made himself thoroughly acquainted with the trade of the colonies, he was intimately acquainted with the company's affairs in this country, and has also shown that he had the company's interest thoroughly at heart. On the last occasion he told the shareholders that Mr. Swann had been in communication with the directors of the Spring Hill Mining Company, and had been well received by them. Since then Mr. Swann and Mr. Morrow had taken their seats at the board of the Spring Hill Company, and been most cordially received, every information being given to them. He believed Mr. Swann enjoyed the full confidence of his co-directors on the Spring Hill board. The shareholders would see the advantage of having Mr. Swann as a director of the Spring Hill Company, because it would enable the board here to obtain more intimate acquaintance with the affairs of the company than they could get by any other means, and discuss with him everything connected with that company, and be kept posted up in everything which was going on. Although they had appointed Mr. Swann to this office, the board of the General Mining Company did not intend to interfere actually with the affairs of the Spring Hill Company, but would make their wishes known. The other directors of the Spring Hill Company were men of local experience, who had a large stake in the company. At the last meeting he gave a history of the negociations which had brought about this arrangement; he told the shareholders that for years the directors had been trying to dispose of this undeveloped field, which they considered valuable, and unless something was done the company would have lost possession of it by the lapse of the lease. For some years it was in the hands of agents over there, to whom, if it had been sold, a commission would have had to be paid. It was entirely owing to Mr. Swann that the present arrangement had been brought about; Mr. Swann went out with a full knowledge of the ideas of the directors; but the idea of amalgamating with the Spring Hill Mining Company originated with Mr. Swann. After Mr. Swann had been out he came home and consulted with the directors, and then went out again to arrange upon certain terms, and he managed to exceed the minimum price fixed by the board, and the directors had given Mr. Swann what they considered only an adequate return for the trouble he had taken and the ability he had shown by awarding him the sum of 500*l.* No doubt some shareholders might be anxious to hear about the important subject of a return of some portion of capital. The present meeting had actually been delayed beyond the usual time in the hope that the directors would be able to announce that they had attained the sanction of the Court of Chancery to a return of capital. But they were all aware of the law's delays. However, he was glad to be able to state that they had to appear that very day (and he hoped for the last time) in order to obtain the certificate from the chief clerk and the order for applying for a day for the application to be heard before the Vice-Chancellor.

and he hoped that would be accomplished and settled before Dec. 20. If they obtained the order by that date the warrants for 1*l.* per share would go out on Dec. 31, so that the matter would be closed before the end of the year. But he should mention that before the directors could issue the cheques the shareholders must return to the office the certificates, so that they might be cancelled and new ones issued. There was no other subject to which he need refer, but he should be happy to answer any questions.

Mr. Ruding asked the average price they were obtaining for Sydney coal?

The Chairman: About 21 75 c., or it may be a little over.

Mr. Ruding: How many directors, including the two gentlemen nominated by you, are there on the board of the Spring Hill Company?——The Chairman: There are seven.

Mr. Ruding thought it was a mistake to have on the board of that company a gentleman resident in this country; they ought to have had a local man.

The Chairman said that if they could have got a thoroughly good man there to act as the company's second director perhaps it might have been better, but under the circumstances he thought the appointment of Mr. Swann the very best thing that could be made. He might mention that Mr. Morrow actually resided nearer the Spring Hill property than the President of the company himself, who lived at Ottawa. It was of the greatest advantage to the directors to have a gentleman like Mr. Swann visiting the mines.

The meeting then broke up.

CHONTALES CONSOLIDATED MINING COMPANY.

The ninth ordinary general meeting of shareholders was held at the offices, Gresham House, on Monday,

The Right Hon. the Earl Nelson (the Chairman) presiding.

Mr. J. Jameson Truran (the secretary) read the notice calling the meeting and the report of the directors, which was as follows:—

The directors beg to present to the shareholders their report and the accounts of the company, duly audited to June 30, 1879.

During the twelve months 16,707 tons of ore were crushed, producing 3637 ozs. of gold, or an average of 4½ dwts. per ton. The cost of breaking, raising, and dressing this ore, including management at the mines and in England, was 11,076*l.* 12s., equal to 13s. 2d. per ton of stuff, whilst the total receipts were 10,057*l.* 10s. 11d., showing a loss on the twelve months' operations of 1019*l.* 1s. 1d. This loss may be partly attributed to the falling off of the average produce, which has been nearly 1 dwt. below the produce of the preceding year.

The shareholders are aware that for some time past the extraction of the gold has engaged the serious attention of the board, and they have been led by a series of professional assays and experiments to believe that a considerable loss has been going on. With a view to remedy this defect they have appointed a reduction officer to aid the manager in his efforts to save more gold, and the directors anxiously await the report from the newly-appointed reduction officer. Mr. Forsyth, who has been appointed to this office, sailed from Southampton on Sept. 17 last, reached Greytown on Oct. 17, and has, no doubt, ere this reached the mines.

The Pavon Mine has been frequently referred to by the board in their correspondence with Mr. White, who has estimated that a capital sum of 10,000*l.* would be required to erect machinery and properly to open out the Pavon Mine. The directors would gladly see the company's pneumatic stamps profitably employed there, but owing to the scarcity of funds and the desire to concentrate all efforts on the upper mines no further action can at present be taken in regard to this part of the property.

The sum of 5000*l.* has been raised by debentures out of the 20,000*l.* authorised by the articles. This sum if taken up when first asked for by the directors would have enabled at once a large development of the mines, and rendered the company independent of any casual falling off in the lodes upon which operations are at present confined. The 1200*l.* at first subscribed did little more than pay off the bankers' loan. The good returns which continued up to the annual meeting last year were unfortunately succeeded by many months of loss; this was occasioned by a fever at the mines, a difficulty in cashing the company's bills, obliging smaller remittances from England, which curtailed the work at the mines, and thereby still further aggravated the evil.

It was only when the winding-up of the company was imminent that the balance of the debentures asked before was subscribed, and the debts accumulating from the many months of loss were the first thing demanding attention.

The directors enclose the last report from the mines, which prominently sets forth the cause of the small supply of ore to the stamps, and the necessity of an early return to specie payments, and it is satisfactory to observe that Mr. White considers our heavy outlay for machinery and repairs, freight, &c., has ceased. The directors have every confidence in Mr. White's apility and zeal for the interests of the company, but until greater means are placed at his disposal it will be impossible to utilise all the existing machinery, and thereby promote the permanent success of the company.

The directors retiring by rotation at the meeting are Mr. C. S. Hill, and Lieut.-Col. C. G. Perceval, who being eligible offer themselves for re-election. Mr. W. F. Moates, the auditor, also offers himself for re-election.

Should any shareholder be unable to attend the meeting on the 8th prox., the directors enclose a proxy for his signature, which should be filled up and lodged at the office of the company before two o'clock on Saturday, Dec. 6.

The Chairman said he had purposely asked for the report to be read, because he fancied that very often shareholders did not carefully read the reports, and in the present position of the company it was necessary that it should be read. The report had been very carefully considered by the directors, who had placed before the shareholders as clearly as they could the position in which the company stood. The report which he commended to the perusal of the shareholders was the report from the manager of the mine. There were some gentleman who had written to the directors from time to time finding fault with the scanty information given them each month in the mining papers, but the reason was that unless the board went to considerable expense for printing they really could not give more information than the papers would insert. The directors in the newspaper summary gave a fair *resumé* of the accounts and of the operations at the mine; but sometimes in the half-year, and always in the year, they urged the manager to send a report, which really consolidated very much all the summarised information which had been conveyed to the shareholders during that time. All he could say for his co-directors and himself was that as long as they had been on the direction they had not kept anything from the shareholders; on the contrary, the board had been rather accused of telling things when they were not quite certain that they were facts. The report which he was now asking them to read was a very exhaustive one on the present position of the company. When they looked to the past of the mine, and to the nine years during which it had been worked, the directors considered it a very wonderful thing that the mine had been kept afloat at all. He meant to say it was a wonderful thing for the mine itself that, notwithstanding the difficulties it had gone through in connection with the different managers, it had actually got into debt to a comparatively small amount. On the recommendation of one manager (who said it would strengthen his hands) the board sent out pneumatic stamps, but after they were sent the directors found that the manager, carelessly, had not considered the means of putting up a water-wheel to work them. Of course, the directors, not being on the spot, could not find this out for themselves. The stamps, therefore, were practically useless, except when they were worked by steam-power, when they acted very well, but the cost of steam-power was more than would pay for employing it. Of course, the board were obliged to place confidence in the managers whom they selected and sent out. Another manager, with whom the board had good testimonials, recommended that Wheeler pans should be sent out. The directors ordered the pans, and took pleasure in sending them to the mine quickly, and obtained them from New York cheaply. Notwithstanding these and other difficulties the company was still going on, which proved that there was something in the mine if they could only get it out. There was one other thing in favour of the mine, which was the fact that in Mr. Belt's time they had a regular average of 6 dwts. of gold to the ton—an amount which had never been reached since. If the directors could see their way to 5 or 6 dwts. certain, he believed the success of the mine would be secured. It was perfectly true that during Mr. Belt's time there was a very good lode open in Consuelo, which may have been the cause of the better average. Finding that the average of the returns had fallen, the board had been having the tailings collected. The instructions sent out regarding the taking of the tailings—to insure their being properly taken—were most minute, but the directors could not say for certain how they had been taken. There might have been some mistake, for if they were not well stirred up and taken from the top as well as the bottom they might be richer than they otherwise would be. At any rate there was the fact that there was a loss, estimated at 1, 2, 3, and even 4 dwts. to the ton, from the tailings. Therefore, the board had sent out a reduction officer, who had been for some time with Mr. Darlington, and minute directions had been sent out to Mr. White, the manager, to give the reduction officer every facility to work out the problem. Therefore, in a certain sense the company was in a transition state, and nothing definite could be stated until they saw the result of the working with the reduction officer. Mr. White himself was staggered at the idea that there could be any loss; the care he took was so great that he did not think there could be any pilfering, and he did not think there was much lost; but the board had evidence that there was gold lost, and they were glad that Mr. White thoroughly accepted the reduction officer, and was prepared to work with him, and do all he could, by some means or another, to improve the returns. One explanation which had been suggested to the board of the smaller average return per ton was that too much stuff was sent through the arastra at once, thus overpowing it, so that it could not do the work properly. At any rate every effort was being made to remedy the defect, and if it were possible to prevent the tailings carrying off so large a quantity of gold the company would be in a much better position. Another thing he wanted the shareholders to understand was this. People had asked, and naturally asked, why with the appliances they had—36 stamps at San Domingo—those stamps were not employed? The answer was that four had been removed for the purpose of working the Wheeler pans, which had never been worked, whilst with regard to the others Mr. White stated that he could pass no more stuff through the stamps than he had money to do it with. The figures showed that it cost 200*l.* to put 500 tons of ore through the stamps, and to put through a larger quantity would require a proportionately larger amount, but Mr. White said—"I will do it directly if you will give me an extra 200*l.* or 300*l.*" Shareholders might say—"Why did you not send it at once?" He would tell them exactly what happened. The directors were depending now upon two mines. They knew, as the shareholders knew, that mining was uncertain, but when they had had a mine for a very long time they ought to have learned the character of it. The directors had been told over and over again (and they realised the fact very markedly in the report of Mr. White) that this mine went in tiers—that was to say, there was a line of hard stuff, and then a line of good stuff. In years gone by they had managers who wrote extravagant reports, and who said that in the Chontales they had a perfect El Dorado; but this really meant that they had got into good streaks, and it stood to reason that if they had only money enough to work through one good streak at a time, and then come to a hard streak, and so on alternately, the company must always be in a precarious state. What was wanted was a sufficiency of money to lay open three or four good streaks, so as always to have good backs in store. The reason why the directors had not sent out more money was this; he would tell them exactly what happened last time. They had received 900*l.* or 1000*l.* in one month, and 1000*l.* the next, and the directors thought they were getting into good times, and if the last month had given 1000*l.* he was quite prepared to propose to the directors that they should send the balance in specie, and he believed the directors would have assented; but, unfortunately, in that month the returns came down to 500*l.*, the reason for which was given by Mr. White, and in the face of that the directors could not make the proposal. There were two things to think about. It would have been easy for the shareholders to say that it was only a deficiency, and they would not have to pay it for two or three months, and to have sent out 900*l.*, but what would have happened if at the end of the time, when the money became due and the board had nothing to depend upon, and had had bad remittances to meet it? However good the promise might be, the directors would have been in an awkward position. His idea of the way to meet it would be this—to keep on with the payments they had given Mr. White until such time as they had the means of coming to specie payments. The directors were not now in a position to ask the shareholders to give them any more money, but if there was a return from the reduction officer to show there was any chance of enlarging the sum got out of the ore then they might be in another position; or, as Mr. Darlington put it, "If we saw any particular way by making a cross-cut into Consuelo, which has run together, we might know there is something to go forward for, but without that we must trust to the mine." If they had a success the directors were assured by Mr. White that the expense of the machinery and freight, and sending out things which he required, was nearly at an end., and, therefore, they would have money to go on with and to open out the mine. The directors had hope of the mine if more money could be spent about it, but until they had some new starting point to go upon the board could not ask the shareholder to come forward and give more money. There were two other points he would mention; one was that Mr. White had persistently stated in all his reports that when he went out the mines were left in such a state that they had run together, and he had been trying the difficult problem of repairing the mine and putting it into a state to make returns. Another point referred to in the report was about the debentures. The directors asked for the debentures a year ago last June, and the board asked for them on the understanding that directors and shareholders shared and shared alike, and the directors performed their part, and one gentleman took much more than his share. If the shareholders had then come forward and subscribed the 5000*l.* asked for the directors would have been able to send more money to the mine, and also to return to specie payments. It would take, roughly, 3000*l.* to enable them to return to specie payments, and he need scarcely say that if they could send out specie payments instead of bills it would greatly benefit the company. Unfortunately, however, the shareholders only took up debentures to the amount of about 1200*l.*, which was only just sufficient to enable the directors to pay the amount which was due to the bankers. The board increased the remittances to the mine by about 200*l.* per month, but then the fever came, and some difficulties in cash and remittances, which threw the mine back, and the board were obliged to send out less money, instead of more, which they would have done if the debentures had been subscribed. At last, after a whole year, and under the pressure of seeing the company wound up, the debentures were subscribed for, but in the meantime considerable expenses had been incurred, owing to the hand to mouth system in which the mine had been carried on. The financial accounts which had been presented to the shareholders was made up to July 30. Appended to the accounts was a statement of assets and liabilities, and on the date mentioned the balance was 539*l.* 15s. 1d. There had been received since—instalments on debentures, 1456*l.* 4s.; and proceeds of gold sales, 3133*l.* 6s. 3d.: making a total of 5129*l.* 6s. 2d. But since the same date there had been paid—acceptances as they fell due, 2600*l.*; paid to employes who were paid part at the mine and part here, 188*l.* 6s. 8d.; directors' fees, 125*l.*; machinery, stores, and freight, 1552*l.* 12s. 11d.; passage and travelling expenses, 55*l.* 10s.; remittance account, 192*l.*; advance to Mr. Forsyth, 25*l.* (to be repaid by instalments); insurance, 19*l.* 17s. 11d.; law charges, 26*l.* 9s. 4d.; office expenses, printing, rents, and salaries, 182*l.* 19s.; sundries, 25*l.* 6s. 6d.; petty cash, 10*l.*: making a total of 5012*l.*, and leaving a balance of 128*l.* 14s. He was happy to say they had paid all the current debts up to the present time, and also paid for the machinery. There was 723*l.* of debentures still unpaid, and there was a contingent liability on letters of credit of about 1600*l.* In conclusion, the Chairman moved the adoption of the report and accounts.

Mr. Parke Pittar, in seconding the resolution, said he somewhat cavilled with the observation of the Chairman when he stated that the directors could not ask the shareholders to give more money.——The Chairman: I said "now."

Mr. Parke Pittar said he had no objection to asking the shareholders to give more money, and not only that, but he insisted that it was absolutely necessary that more money should be provided. He himself had subscribed 10 per cent. of the money which had been raised on debentures, and would be ready to advance more money if he were supported by the shareholders. A short time since he received a letter from Mr. White (in reply to a letter asking why he did not do certain things), and in that letter Mr. White said he had no money to do anything at Consuelo; he thought they ought to resume the main level at Estrella, but he was adverse to wandering from mine to mine till they had sufficient funds to work and develope the mine. He did not see why other parts of the company's mine should not turn out as good as San Sebastian or Estrella, provided there was outlay enough to put them in good working order. Up to the present time Mr. White had been repairing and benefiting the mine by employing the funds which he had, and thus rectifying the ills which had occurred by the non-performance of their duties by previous managers. The directors had had to spend a good deal of money for extra machinery, and Mr. White had had to expend a good deal of this money for freight and charges in getting it to the mine; and it was just at the moment when success seemed to be crowning his efforts the directors on account of the unsatisfactory way in which the debenture money came in were obliged to stop the payments to Mr. White, who bitterly complained of it in the subsequent part of his letter. Mr. White went on to state that any further expenditure would be devoted to the opening of the mine, and recommended the further extension of St. Sebastian and Estrella Mines, which he estimated would give a profit of 200*l.* per month on an outlay of not less than 2000*l.* But owing to the want of money the directors were obliged to keep their hands tied, and were working the mine in a "pottering" kind of fashion. No mine could give better returns unless it were treated more liberally. He expressed his astonishment that the debentures had not been taken up more liberally, seeing the valuable property which the company undoubtedly possessed. In a month they might not have sufficient funds to meet the bills as they fell due. The directors would no longer become responsible to the bankers for any money advanced, and if shareholders would not find sufficient money to support the undertaking it was their own fault if serious consequences ensued. He hoped the shareholders would come forward and support the directors, and certainly he should be ready with his proportion.

The Chairman said there was not much discrepancy of opinion between himself and Mr. Parke Pittar. What he (the Chairman) meant was that it was not advisable to appeal to the shareholders just now, but when the report was received from the reduction officer they would then be able to decide what was best to be done.

After some remarks from Mr. Palmer, of Bristol, the resolution for the adoption of the report was then put to the meeting and carried.

The retiring directors—Mr. C. S. Hill and Lieut.-Col. C. G. Perceval, were re-elected, and Mr. W. F. Moates re-appointed auditor.

On the motion of Mr. Wethered, of Bristol, a vote of thanks was passed to the Chairman and directors, and the meeting broke up.

LADYWELL MINING COMPANY.

The seventh ordinary general meeting of shareholders was held at the offices of the company, Finsbury-circus, on Wednesday,

Dr. A. G. Brookes in the chair.

Mr. F. F. Wilson (the secretary) read the notice calling the meeting.

The Chairman said he would call upon Captain Waters, who was present, to give any additional information he could beyond that contained in the report.

Capt. Waters said he had really nothing to say except in answer to questions. He might mention, however, that they had driven about 16 fms. in the adit level through a lode producing ore, similar to the specimens on the table; he valued that ore course at from 5 cwts. to ½ ton per fathom. The ore ground was moderately soft, and when they had driven a little distance further they would be able to put tributers to work; and as they were keeping the costs down he hoped they would soon get lead enough to pay the cost-sheet monthly. But it would take two months before they could put in tributers, unless they made a discovery in the 20, which was likely to happen; but the adit now was going forward in virgin ground. In the old Bog Mine, which yielded large quantities of ore in similar ground, the ore was of a similar character to that now on the table, and it was an encouraging fact that all the Shropshire mines yielded good returns when the shale was approached. As they had 250 fathoms of grownd in front of the adit, and as the specimens were of good quality, he thought the prospects of the mine now were better than when they were in the run of ore further north. They were now driving on a continuous veiu, with a splendid wall on each side, and wide enough to be profitable; and, as they were getting nearer the shale, where they always expected to meet with profitable deposits, he thought that what he had said regarding the better prospects of the mine might be relied upon.

Mr. Scott: Is this report which you give now additional to the printed report?——Captain Waters said it was additional to this extent—that the lode yesterday was looking better than when he wrote his report.——Mr. F. R. Wilson: He has driven further upon the lode, and proved it further.

Mr. Scott asked how long a time would elapse before Captain Waters got into the ground where he expected to find large quantities of ore?——Capt. Waters said he expected to make a discovery every day, but the ground was of such a character that he could not fix the time within six months. They were now driving 4 fathoms per month there.

Mr. Peele: Are the indications there the same as were profitable in the adjoining mine?——Captain Waters: Yes.——The Chairman: I have seen some ore from the Roman Gravels which was similar in character to this.

Mr. Scott: Have you any experience of the Roman Gravels Mine at the same depth?——Captain Waters: I have heard people say they have seen 600 tons from Roman Gravels at the 12 fm. level, and it was black clinkers like this. Geologically and locally we stand precisely in the same position as at Roman Gravels.

The Chairman said he should not occupy the time of the meeting long, as the report clearly and truly shows the present position of the mine and its present prospects, so that the shareholders could see what their present position was with as much accuracy as the directors themseves. At the last meeting, and at several meetings before, they all had the impression there was a good prospect before them of ultimate success, and although that had not been fulfilled up to the present time, still he did not see that there was any reason to dismiss from their minds the hope that they had previously entertained. (Hear, hear.) When he considered the history of the district, and looked at the fact that they had Roman Gravels on the east and the Grit on the west (two of the finest mines which Shropshire had produced), it certainly did seem to him that it would be very extraordinary if, especially considering the indications, which were not present six months ago, they did not ultimately make the mine a success. It was almost ridiculous to advert to the fact that the times had been adverse to all ventures of this kind on account of the low price at which the produce sold, and it had been a perfect struggle with almost all mines to keep on with the many drawbacks against them. Some time ago the board pursued with vigour the sinking of a shaft to the 32, and on the way they found veins yielding 2 tons per fathom, but the vein suddenly "twitched" up. But this did not destroy his hopes. He had no doubt that if the vein were pushed down to the 16 or 32 they would get into good ground again, but they could not do it owing to the expenses of pumping and coal, which the board did not feel themselves justified in incurring. To his own mind it seemed impossible but what this should be a good mine. Under the adverse circumstances which they had had to contend against the board had done the best they could for the company, and adopting the advice which Capt. Waters had given them, had contracted the expenditure to the lowest amount, and the directors hoped to meet the shareholders under happier auspices on some future occasion. In conclusion, the Chairman moved the adoption of the report and accounts.——Mr. Wm. Dunn seconded the resolution.

Mr. Scott, in the course of a discussion which ensued, expressed the opinion that the directors should work without remuneration until better times came.

Mr. Sarson entirely differed from Mr. Scott, and thought it was not reasonable to expect gentlemen to give up their time, and give their experience for nothing.

The Chairman said that in one year when the company was not prosperous, the board did give up their remuneration, and he might mention that at the board meeting that very day the directors had considered the question of making some further reduction in addition to the reduction which they made a short time since.

Mr. Sarson said that as the subject had been ventilated and discussed he thought it might now be left in the hands of the board to deal with.

The resolution for the adoption of the report and accounts was then put and carried.

The retiring directors and auditors were re-appointed, and a vote of thanks having been passed to the Chairman and directors, the meeting broke up.

RED ROCK MINING COMPANY.

A meeting of shareholders was held at the offices of the company, Bishopsgate-street Within, on Tuesday,

Mr. I. B. Tippetts in the chair.

Mr. John Owen (the secretary) read the notice calling the meeting. The report of the directors and statement of accounts, which have previously been published, were taken as read.

The Chairman read the report from Mr. Kitto, the manager.

The Chairman: Gentlemen, the echo of the report is that during the current year we have made a loss, which we hope to retrieve in the year to come. When we met last year we were deploring the low price of ore. During the present year that price had been still more reduced. In the report of 1878 the average price of ore during the previous year, terminating in October, was 9*l.* 13s. 4d. per ton—the highest price during that year being 11*l.* During the present year the average price has been 8*l.* 10s. 6d.—the highest price we have been able to obtain being 9*l.* 7s.; but the satisfactory feature about that is to know that is was obtained in the last month with which the accounts deal—October. (Hear, hear.) That depression in lead has operated in two ways—first, it has diminished our receipts for the lead actually sold; and, second, it has prevented us from working certain parts of the mine which at the ruling price during the currency of last year would not have paid to stope away. In other words, we found that a great deal of the lead could not be produced at a price that would be remunerative, and, therefore, we have allowed a great deal to remain in the mine which otherwise might have been converted into gold, and put into the pockets of the shareholders. With the revival of prices that we are now looking forward to, and which we have every reason to think will go on increasing, we do hope, at our next meeting we shall be able to come before you with a more satisfactory report than that which I hold in my hand to-day. As you will see the practical result of the year's working has been a loss of 1000*l.* That is a circumstance which we all deplore, and which is to be attributed entirely to the circumstances I have already stated. So far as the mine itself is concerned we retain the opinion we have at various times expressed, that it is a thoroughly good property, and we are confirmed in that opinion by the report I have read to you to-day. (Hear, hear.) You will have noticed that the amount of lead produced this year is only 200 tons. We could have produced considerably more than that, as you will have seen by one of the paragraphs in the directors' report, which I will venture to read:—

"The total sales of ore made since the company had been established amount to 400 tons, in addition to which there were at the close of the financial year to which the accounis apply some 25 tons of marketable ore at surface. Although the quantity hitherto sold falls short of that anticipated, the deficiency has chiefly arisen from the very low prices obtainable for lead preventing a large portion of the ore discovered being prepared for market, except at a loss to the proprietors. This low-grade ore for the greater part remains in the levels, but should only the present advance in value be maintained it will be utilised, and will materially augment future sales. The directors, therefore, have reason to believe that, but for the circumstances named, the estimate made on the occasion of the last annual meeting would have proved substantially correct."

I will not detain you with any further remarks. You will have had our report before you, and I have no doubt you will have considered it. I have only to conclude by moving its adoption, together with that of the accounts.

Mr. Kerly seconded the resolution.

Mr. Parker asked for an explanation of the amount (1079*l.*) "calls due."——Mr. Owen said they were payments to be made on account of debentures. The debenture money was arranged to be paid in two instalments, one-half at the time of application, and the other half three months later on. Consequently one-half would be paid on Jan. 8. Since these accounts had been made up a good deal of the money had come in. The entire amount was perfectly good. (Hear, hear.)

Mr. Parker said he was quite satisfied with the explanation, though the term "calls unpaid" was a little misleading, as it led him naturally to think of the shares.

Mr. Davey asked the Chairman if the assets would be sufficient to carry on the concern in a vigorous manner?——The Chairman replied that he was afraid not.

Mr. Davey asked if the shareholders would take the remaining 146 debentures?

Mr. Brookes, J.P. (director), said he hoped it would not be necessary to issue them. There were good places in the mine from which they could get ore, and prices were rising.

On the motion of the Chairman, seconded by Mr. Ross, Mr. Brookes, J.P., was elected a director.

Mr. Brookes, in returning thanks, said: I have always taken a very great interest in this mine. It has been my favourite mine above all those with which I am connected in North Wales. I have been down it some seven or eight times, and all over it. It is remarkable that wherever you look there is always some ore in larger or smaller quantities, and in some places it is well worth taking away now. There is every probability that we shall drop into a fine bunch of it one of these days. (Hear, hear.) The new run spoken of in the manager's report as going in the direction of Frongoch, which has only lately been found, seems to be the very spot that is likely to produce this bunch. (Hear, hear.) You may rely upon it, gentlemen, that I shall do my best to promote the prosperity of this mine.

On the motion of Mr. Davey, seconded by Mr. Parker, the auditor, Mr. Killingsworth was re-elected, and the proceedings, after the cordial thanks of those present had been passed to Mr. Tippetts for presiding, then closed.

Old Measure.—One of the most ancient local measures still in use in England is described by the Board of Trade in a recent report prepared for Parliament. The measure referred to is the Miners and Brenners Dish. Under the Derbyshire Mining Customs Act of 1852 the dishes or measures for lead ore for the wapentake of Wirksworth and manor of Crich are to be adjusted according to the Brazen Dish deposited in the moot hall at Wirksworth. This dish is stated to contain about 14·047 imperial pints. It is of rectangular form, and bears an inscription setting forth *(inter alia)* that "This Dishe was made the IIII day of October, the IIII yere of the Reign of Kyng henry the VIII., and that it is to Remayne in the Moot Hall at Wyrksworth, hangyng by a cheyne, so as the merchantes or mynours may have resort to ye same at all tymes to make the tru measure after the same."

Dephosphorisation of Iron.—It has been suggested by the Hörde Mining and Iron Manufacturing Company to the Prussian Minister of Public Works that, in view of the extreme importance of the process for the dephosphorising of iron in the Bessemer manufacture, which has been experimented with at their works, an official scientific opinion upon its value and its applicability in the various iron districts of Germany would be of great interest to all German iron manufacturers. According to the Westphalische Zeitung, the Minister has responded to the suggestion by immediately appointing qualified officials to witness experiments, and report thereon.

Treating Phosphoric Iron by the Bessemer Process.—For this purpose Mr. Edward Riley, F.C.S., of City-road, causes molten phosphoric or other pig to be treated, first, in a converter lined with the ordinary ganister lining, so as to remove the larger portions of the silicon in the metal, and afterwards he causes the molten and partially blown iron to be transferred into a converter lined with a lime or other basic lining, and there to be further blown. By these means he removes almost entirely the silicon from the metal before treating it in a converter lined with lime, and so the fluxing action of the silica on the basic lining is in a great measure obviated, and the pig can be treated for the removal of the phosphorus more readily on account of a less amount of flux being required, and consequently a less amount of cinder being formed, thus less heat will be abstracted from the converter. Although this invention is specially applicable to the treatment of phosphoric pig it may with advantage be used to improve the quality of ordinary Bessemer metal after the same has been blown in a ganister lined converter, the last traces of silicon are by such treatment more effectually removed, and the quality of the metal is thereby improved. For the more convenient conduct of the improved process he arranges the pair of converters which he employs in such manner that the metal may be poured direct from the ganister lined converter into that provided with the basic lining.

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THE DOWSING-ROD AND LIGHTNING CONDUCTORS.—The absurdity of the notion that mineral lodes can be discovered by the use of the dowsing-rod has been pretty well demonstrated in the *Mining Journal*, and amongst educated men dowsers, hydroscopes, and others of the same class are generally regarded as impostors; it appears, however, that the dowsing-rod is still utilised as a method of extracting metal from the pockets of the credulous, although it does not facilitate obtaining it from the bowels of the earth. Messrs. G. S. and A. R. Prescott, of Merrimac., Mass., U.S., are at present doing a fair business by professing to discover by its aid the position and direction of electrical earth currents. The pretended object of their investigations is to determine where it is and where it is not necessary to put up lightning conductors. They would probably find conductors necessary where there is a chance of obtaining a job, but be this as it may there will be much greater safety in relying upon natural laws than upon any such nonsense as dowsing, the districts most liable to be affected, and where therefore lighting conductorsare most necessary, being those where the ground is a good conductor of electricity, such as districts where large deposits of iron ore exist, where the ground is low and moist, and so on. The cause of the danger in each case is obvious.

THE DOWSING-ROD SUPERSEDED.—It is curious to observe how easily credulous persons are found in all countries ready to accept any theory, however much it may be opposed to ascertained facts or to common sense, and it must be acknowledged that but for this fatuous credulity the belief of anyone in the dowsing-rod could not so long have retained a hold upon the minds of even the ignorant. Even the dowsing-rod has, however, now been eclipsed by Mr. James Phillips, of Central Falls, R. I., and now of Grass Valley, who has constructed an electric instrument with which he claims that paying deposits of gold, silver, and copper can be positively indicated, and their exact location pointed out. This is accomplished without the tedious and expensive use of the pick or drill, or the common appliances of prospecting. By an electric instrument of his own invention and construction he is happily enabled to definitely determine the exact location of bodies of the precious metals, as well as to correctly trace the lodes or veins carrying those metals in their varying dips, angles, and sinuosities. Mr. Phillips very truly states that the uncertainties and perplexities attending the laborious efforts of the gold miner is painfully and strikingly attested by many thousands of unproductive and abandoned shafts, tunnels, deep cuts, &c., to be found on every hand throughout the gold regions of California. In the distant past, and up to the present day, the toiling gold miner has been and still is governed in making his location, by chance or probability, and cold disappointment as a rule has crowned his last earnest effort. To derive some means of discovery whereby might be lessened the uncertainties and hazards of prospecting has been the earnest wish of the gold miner from the earliest years of his experience, and Mr. Phillips considers that he has now met this wish, and that the gold miner may by enlisting his services avoid groping in dark conjecture by prospecting, but may, with intelligent certainty, make his location and unlock the treasure-house beneath his feet.

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BICKFORD, SMITH, AND CO., of TUCKINGMILL, CORNWALL; ADELPHI BANK CHAMBERS, SOUTH JOHN STREET, LIVERPOOL; and 85, GRACECHURCH STREET, LONDON, E.C., MANUFACTURERS AND ORIGINAL PATENTEES of SAFETY FUSE, having been informed that the name of their firm has been attached to fuse not of their manufacture, beg to call the attention of the trade and public to the following announcement:—

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BLASTING FUSE FOR MINING AND ENGINEERING PURPOSES

Suitable for Wet or Dry Ground, and effective in Tropical or Polar Climates.

W. BENNETTS, having had many years' experience as Chief Engineer with Messrs. Bickford, Smith, and Co., is now enabled to offer Fuse of every variety of his own manufacture, of best quality, and at moderate prices.

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Late the MOLD FOUNDRY COMPANY. Established 1838.)

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PITWORK, BOILERS, FORGINGS,

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FOR COLLIERIES, IRONWORKS, &c.

SUITABLE FOR PIT BANKS, ENGINE HOUSES, &c., &c

Each Lamp gives a light equal to 26 candles.

No Breakage of Chimneys from Heat.

Cottons last three months.

Will burn any Mineral Oil.

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LOWER TEMPLE STREET,

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By JOHN BATES GREGORY and JESSE PRICE, of Hope Station, near Mold, Flintshire.

Price: Mounted on holland, coloured and varnished, and fixed on mahogany rollers, 30s. each; or in book form, 12×9, mounted and coloured, 25s. each.

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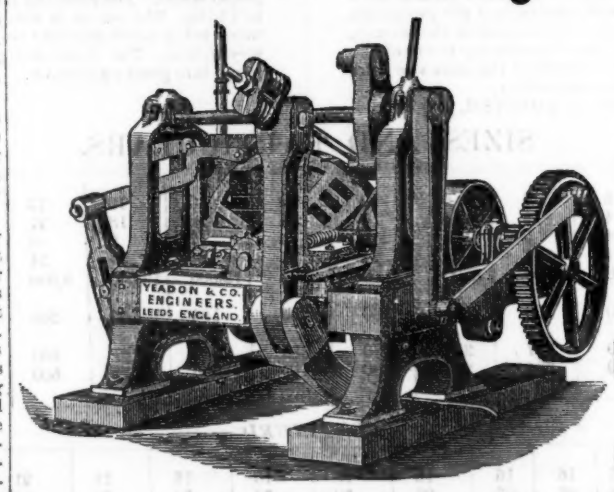
PATENT BRIQUETTE MACHINE



GREAT SAVING NO WASTE COAL.

NO COLLIERY SHOULD BE WITHOUT.

These Machines utilise smudge or small coal by making it into Briquettes or blocks of compressed fuel at the rate of 36,000 per day The cost of preparing, mixing, and making is under One Shilling per ton. The Briquettes sell readily for Locomotives, Household, or other purposes. Full particulars on application to

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ALBION PLACE, LEEDS,

ENGINEERS, AND CONTRACTORS

FOR EVERY DESCRIPTION OF PLANT FOR

Collieries, Mines, & Brickworks.

TESTIMONIALS.

Messrs. Yeadon and Co., Leeds. BERNISSART, NEAR PERUWELZ (BELGIUM), JANUARY 4TH, 1878

I continue to be **perfectly satisfied** with the work performed by the two patent Briquette Machines as well as with that of the Steam Engine, Mixer, &c., which you supplied a few months ago for the manufacture of compressed slack Briquettes, and that I can recommend them as being the **best machines** I know of, after having carefully studied **all the Briquette Machines** constructed at home and abroad. (Signed) G. FAGES, General Manager for the Bernissart Collieries.

Messrs. Yeadon and Co., Leeds. BERNISSART, NEAR PERUWELZ, JANUARY 24TH, 1879.

I continue to be highly satisfied with the Briquette Machines which you supplied in 1877. They do their work very well, and produce the Briquettes very regularly, and of a good quality.

(Signed) G. FAGES, General Manager.

Messrs. Yeadon and Co. QUAREGNON (BELGIUM), SEPTEMBER 13TH, 1879.

I have the honour to inform you that we are **entirely satisfied** with the erection and working of the two Briquette Machines, as well as the Steam Engine and Mixing Apparatus. (Signed)

A FRANEAU, Managing Director to the Bien du Cœur et de la Boule Collieries, Quaregnon

PARIS EXHIBITION, 1878.

GOLD AND SILVER MEDALS AWARDED for Steam-Engines & Boilers, also the Special Steam Pump, and Compound Pumping Engine.

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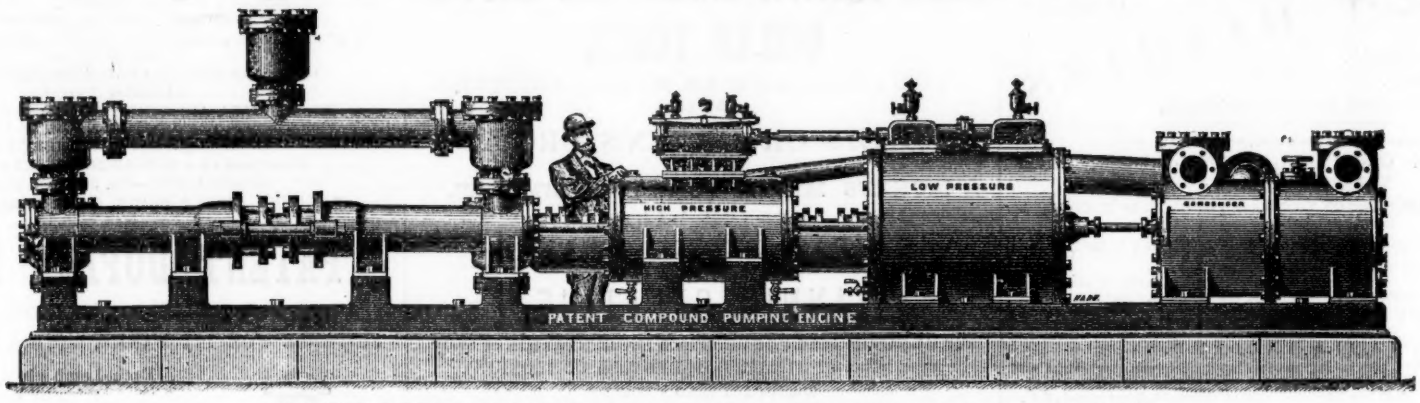
AND BIRMINGHAM, (TANGYE BROTHERS), CORNWALL WORKS, SOHO.

TANGYE'S DIRECT-ACTING
COMPOUND PUMPING ENGINE,

For use in Mines, Water Works, Sewage Works,

And all purposes where Economy of Fuel is essential.



TANGYE'S DIRECT-ACTING COMPOUND PUMPING ENGINE, WITH AIR-PUMP CONDENSER.

TANGYE'S COMPOUND PUMPING ENGINE COMBINES SIMPLICITY, CERTAINTY OF ACTION, GREAT ECONOMY IN WORKING, COMPACTNESS, AND MODERATE FIRST COST.

This Engine will be found the most simple and economical appliance for Mine Draining, Town Water Supply, and General Purposes of Pumping ever introduced, and as regards Mine Draining, the first cost is very moderate compared with the method of raising water from great depths by a series of 40 or 50 fm. lifts. No costly engine-houses or massive foundations, no repetition of plunger lifts, ponderous connecting rods, or complication of pitwork, are required, while they allow a clear shaft for hauling purposes. In this Engine the economical advantages resulting from the expansion and condensation of steam are very simply and effectively obtained. The steam after leaving the high-pressure cylinder is received into and expanded in the low-pressure cylinder, and is thus used twice over before being exhausted into the condenser or atmosphere.

The following first-class Testimonials will bear evidence as to the efficiency and economy of the Engine:—

TESTIMONIALS OF TANGYE'S COMPOUND PUMPING ENGINE.

Newcastle and Gateshead Water Company, Newcastle-on-Tyne, Oct. 20, 1879.
21" / 36 × 10" × 48" COMPOUND CONDENSING STEAM PUMPING ENGINE.
Messrs. Tangye Brothers.

GENTLEMEN,—In reply to your enquiry as to the efficiency of the two pairs of Compound Condensing Engines recently erected by you for this company at our Gateshead Pumping Station, I have great pleasure in informing you that they have far surpassed my expectations, being capable of pumping 50 per cent. more water than the quantity contracted for; and by a series of experiments I find they work as economically as any other engine of the compound type, and will compare favourably with any other class of pumping engine. By the simplicity of their arrangement and superior workmanship they require very little attendance and repairs, and the pumps are quite noiseless. A short time ago I had them tried upon air by suddenly shutting off the column, and found they did not run away, thus showing the perfect controlling or governing power of the Floyd's Improved Steam-moved Reversing Vale. I will thank you to forward the other two pairs you have in hand for our Benwell Pumping Station. Yours respectfully,

(Signed) JOHN R. FORSTER, Engineer.

The Chesterfield and Boythorpe Colliery Company (Limited),
Registered Office, Boythorpe, near Chesterfield, Oct. 1, 1879.
21" / 36 × 12" × 48" DOUBLE RAM COMPOUND CONDENSING STEAM PUMPING ENGINES.
Messrs. Tangye Brothers. Supplied in January, 1878.

GENTLEMEN,—Referring to the above, which we have now had working continuously night and day for the last 12 months, we are glad to say that it is giving us every satisfaction. It is fixed about 400 feet below the surface, the steam being taken down to it at pressure of 45 lbs. per square inch. We can work the pump without any difficulty at 28 strokes per minute=224 ft. piston speed. The pumping power is enormous. The vacuum in the condenser being from 11½ to 13 lbs. The pump is easily started, and works well and regularly. The amount of steam taken being much less than we anticipated. We consider the economy in working very satisfactory indeed. The desire for power and economy at the present day will certainly bring this pump into great requisition. Yours truly,

(Signed) M. STRAW, Manager.

SIZES AND PARTICULARS.

Diameter of High-pressure Cylinder.....In.	8	8	8	10	10	10	10	12	12	12	13	14	14	14	14
Ditto of Low-pressure Cylinder .....In.	14	14	14	18	18	18	18	21	21	21	21	24	24	24	24
Ditto of Water Cylinder .....In.	4	5	6	5	6	7	8	6	7	8	10	7	8	10	12
Length of stroke .....In.	24	24	24	24	24	24	24	24	24	24	24	36	36	36	36
Gallons per hour approximate	3900	6100	8800	6100	8800	12,000	15,650	8,800	12,000	15,650	24,450	12,000	15,650	24,450	35,225
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder ..... Non-condensing...	360	330	160	360	250	184	140	360	264	202	130	360	275	175	122
Ditto ditto ditto—with Holman's Condenser...	480	307	213	480	333	245	187	480	352	269	173	480	367	234	162
Ditto ditto ditto—with Air-pump Condenser...	600	384	267	600	417	306	335	600	440	337	216	600	459	293	203

CONTINUED.

Diameter of High-pressure Cylinder .....In.	16	16	16	16	18	18	18	18	21	21	21	24	24	24	30	30
Ditto of Low-pressure Cylinder .....In.	28	28	28	28	32	32	32	32	36	36	36	42	42	42	52	52
Ditto of Water Cylinder .....In.	8	10	12	14	8	10	12	14	10	12	14	10	12	14	12	14
Length of stroke .....In.	36	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48
Gallons per hour approximate	15,650	24,450	35,225	47,950	13,650	24,450	35,225	47,950	24,450	35,225	47,950	24,450	35,225	47,050	35,225	47,950
Height in feet water can be raised with 40 lbs. pressure per square inch in cylinder ..... Non-condensing..	360	230	160	118	456	292	202	149	397	276	202	518	360	264	562	
Ditto ditto ditto—with Holman's Condenser...	480	307	213	154	603	389	269	198	528	363	269	691	480	352	750	
Ditto ditto ditto—with Air-pump Condenser...	600	384	267	191	750	486	337	248	660	450	337	864	600	440	937	

PRICES GIVEN ON RECEIPT OF REQUIREMENTS.

Any number of these Engines can be placed side by side, to work in conjunction or separately as desired, thereby multiplying the work of one Pump to any extent.

NORTHERN DEPOT:—TANGYE BROTHERS, St. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.

TWO GOLD MEDALS.

SOLE MAKERS—

The LEEDS FORGE CO., Ltd.,

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CORRUGATED FURNACE FLUES,

NOW APPLIED TO OVER

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PARIS, 1878.

PRICE LISTS AND PARTICULARS ON APPLICATION.

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ATTERCLIFFE, SHEFFIELD,

DEVOTE THEIR EXCLUSIVE ATTENTION TO THE MANUFACTURE OF

CRUCIBLE STEEL CASTINGS,

FOR

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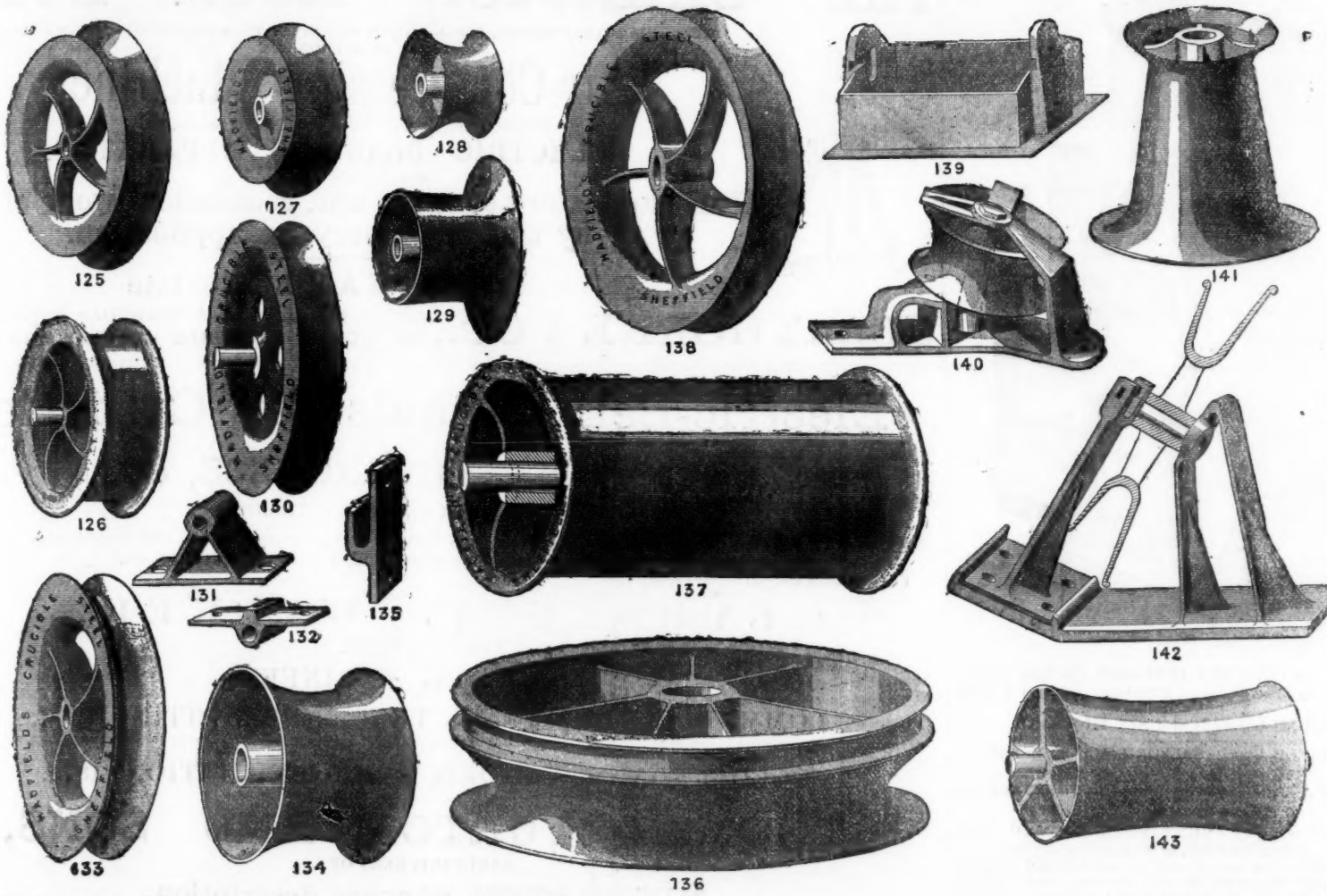
AND ARE THE SOLE MAKERS OF

Hadfields Steel Rollers and Pulleys.



The following are some of the advantages claimed by the above Rollers and Pulleys:—

1.—LIGHTNESS.—They are cast by us from one-third to one-half lighter than cast-iron.

2.—SAVING OF HAULAGE POWER AND WIRE ROPES.—Our Pulleys and Rollers, being extremely light, they effect a great saving in haulage power, and considerably prolong the life of wire ropes. As our Rollers and Pulleys are equally balanced, and never lob-sided, the instant the rope or chain touches they readily revolve, and all grinding or sawing by the rope is avoided.

3.—STRENGTH.—Although extremely light they cannot be broken by ordinary means—say by the sudden passing of chains over them, such as frequently connect the rope to the wagon, or hang loose from the end of the passing wagons.

4.—DURABILITY.—One of our Crucible Steel Rollers or Pulleys will outlast about TWELVE IRON ONES.

5.—They reduce wear and tear to a minimum, and are a great saving in working expenses.

FOR LIST OF PATTERNS, SIZES, AND WEIGHTS, SEE LISTS No. 7. FOR ROLLERS AND No. 7A FOR PULLEYS.

MACHINE MOULDED STEEL GEAR WHEELS OF EVERY DESCRIPTION.

This Advertisment is varied from time to time.

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Cut and Lath Nails; Joiners', Moulders', and Flooring Brads; Copper and Zinc Cut Nails; Colliery Plate Nails; Washers, Boiler Plates, Tube Strips, Sheet Iron for Galvanising and other purposes.

PRICE LIST ON APPLICATION.

PIERCE S. HAMILTON, PRACTICAL GEOLOGIST, SURVEYOR, AND MINING ENGINEER AND AGENT, OFFERS HIS SERVICES in either of these capacities to those interested or desirous of investing in MINING PROPERTY in the PROVINCE OF NOVA SCOTIA or elsewhere in the DOMINION OF CANADA.

Having for years filled the administrative position of Chief Commissioner of Mines for Nova Scotia, and having both before and afterwards been himself largely engaged in Mining operations, Mr. HAMILTON has had exceptionally good opportunities of informing himself as to the variety, extent, and character of the mineral deposits of that Province, and as to the most economical and effective methods of working them.

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FOR MY LATEST PATENTED STONE BREAKERS AND ORE CRUSHERS.

Stones broken equal, and Ores better, than by hand, at one-tenth the cost.

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ORIGINAL PATENTEE AND SOLE MAKER OF BLAKE'S

Improved Patent Stone Breakers & Ore Crushers.

New Patent Reversible Jaws, in Sections, with Patent Faced Backs.

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OVER 2500 IN USE.

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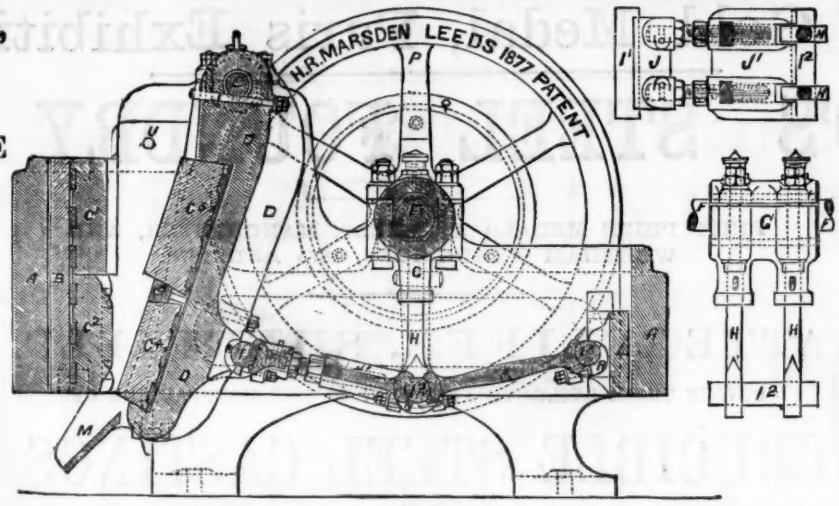


READ THIS—

Wharthole Lime Works, Maryport, Whitehaven, November 7, 1873.

H. R. MARSDEN, Esq., Soho Foundry, Meadow-lane, Leeds.

DEAR SIR,—The machine I have in use is one of the large size, 24 in. by 12 in. The quantity we are breaking daily with this one machine is 250 tons, the jaw being set to break to a size of 2¼ in. We have, however, frequently broken over 300 tons per day of ten hours, and on several occasions over 360 tons during the same period. The stone we break is the blue mountain limestone, and is used as a flux in the various ironworks in this district. We have now had this machine in daily use for over two years without repairs of any kind, and have never had occasion to complain of any inconvenience in using the machine. I hope the one you are now making for me may do its work equally well. The cost—INCLUDING ENGINE-POWER, COALS, ENGINEMAN, FEEDING, and all EXPENSES OF EVERY KIND—is just 3d. per ton. Should any of your friends feel desirous of seeing one of your machines at work, I shall have much pleasure in showing the one alluded to.

I am, dear Sir, yours very truly,
WILLIAM MILLER.

AND THIS—

Wharthole Lime Works, Aspatria, Cumberland, July 11th, 1878.

H. R. MARSDEN, Esq., Soho Foundry, Leeds.

DEAR SIR,—We are in receipt of your letter of 4th inst. I may just state that the stone breaker above named has been under my personal superintendence since its erection, and I have no hesitation in saying that it is as good now as it was five years ago.

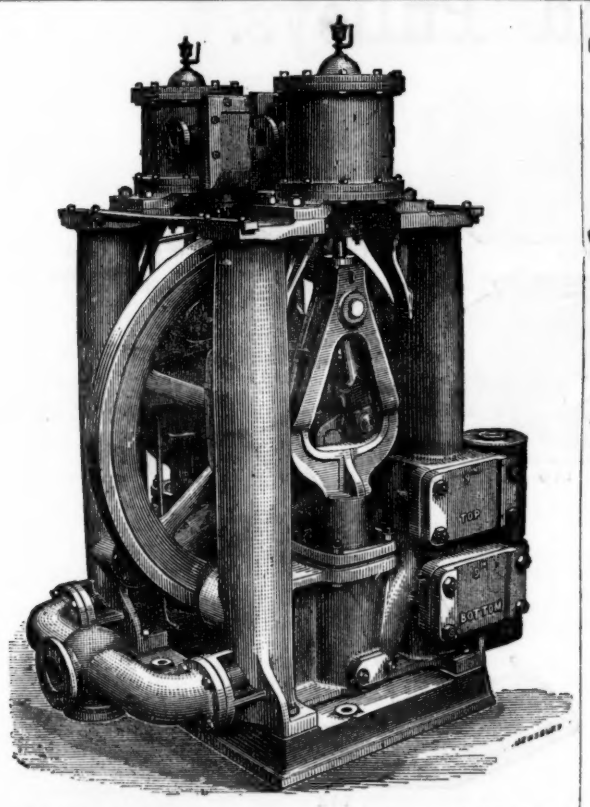
I am, dear Sir, yours faithfully,
FRANCIS GOULD.

GREATLY REDUCED PRICES ON APPLICATION.

ALL BEARINGS are renewable, and made of H.R.M.'s Patent Compound ANTIFRICTION METAL.

CATALOGUES, TESTIMONIALS, &c.

H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAND.



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JOHN CAMERON has made over SIX THOUSAND.

WORKS: OLDFIELD ROAD, SALFORD, MANCHESTER.

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GOLD AND SILVER AMALGAMATING MACHINERY, complete. Stamp Mills, Water Wheels, Steam Engines, &c.

ROLLER SHELLS FOR CRUSHING MILLS—a speciality.

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Air-Compressing Machinery,

Simple, strong, and giving most excellent results, and

ELECTRIC BLASTING APPARATUS.

Full particulars of rapid and economical work effected by this machinery, on application.

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CAST STEEL FOR TOOLS. CHISEL, SHEAR, BLISTER, & SPRING STEEL

MINING TOOLS & FILES of superior quality.

EDGE TOOLS, HAMMERS, PICKS, and all kinds of TOOLS for RAILWAYS, ENGINEERS, CONTRACTORS, and PLATELAYERS.

LOCOMOTIVE ENGINE, RAILWAY CARRIAGE and WAGON SPRINGS and BUFFERS.

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Manufacturers of

CRANE, INCLINE, AND PIT CHAINS,

Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADES FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.

Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions.

STOURBRIDGE FIRE BRICKS AND CLAY.

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